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The Journal of Sociologic Medicine

Continuing the Bulletin of the

American Academy of Medicine

DECEMBER, 1915

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(Specializing in Medical Sociology)

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The Journal
OF
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LEADING ARTICLE.

COMMUNITY RESPONSIBILITY FOR BETTER OBSTETRICS.

"There never was a reform in administration in this world which did not have to make its way against the strong feeling of good honest men concerned in existing methods of administration and who saw nothing wrong. It is no impeachment of a man's honesty, his integrity, that he thinks the methods he is familiar with and in which he is engaged are all right. But you cannot make any improvement in this world without overriding the satisfaction that men have in things as they are and of which they are a contented and successful part."[1] These words were spoken by a statesman with reference to political matters but they might well have been uttered by a would-be reformer of obstetric practice with reference to existing conditions in the United States.

For we must face the fact that obstetrics has never been placed abreast of medicine and surgery in the application of modern scientific knowledge, that, while woman's contribution to the race is the very essence of its continuity, and her need of care perpetual, yet society has always neglected woman, the child-bearer.

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[1] Speech by Elihu Root, August, 1915.

Our medical schools do not adequately prepare students for the practice of obstetrics. This has been fully demonstrated by Dr. J. Whitridge Williams in his study of "The Midwife Problem and Medical Education in the United States," publisht in the Transactions of the American Association for Study and Prevention of Infant Mortality.[1]

Moreover, a dual standard of obstetric practice exists in the United States. A study of the above-named Transactions for the years 1911–1915 reveals the facts of the qualifications and practice of midwives in our cities and rural communities, and shows that hundreds of ignorant women, with almost no preparation, are permitted to engage in the practice of a major branch of medicine. A review of these volumes discloses the magnitude of the problem of better obstetrics in America, and presents the whole question in its many-sidedness.

Possibly the strongest point developt is the pre-eminently sociologic aspect of the subject. The emphasis in life-saving effort for the baby has slowly shifted backward from remedial toward preventiv measures; from pure milk and milk modification toward maternal nursing; from care of the sick baby toward removal of the causes of sickness; from the milk station to the welfare clinic. We have learned to regard the child as an entity from the time of conception; and pre-natal care is found to be as necessary as care at confinement and thruout infancy.

While progress has been made in the care of the baby, deplorable apathy in care for the mother herself persists. Dr. Fulton, in a notable paper on Age-Incidence of Causes of Infant Mortality,[2] says that the "center of infantile mortality is probably located, as Carl Pearson suggests, in the ante-natal period time, about one month before the proper birthday; that, of the recorded post-natal mortality under the age of one year in the Registration Area, about one-third is due to ante-natal causes, and that of the recorded mortality from ante-natal causes, about one-half is due to faulty or incomplete utero-gestation and might be avoided or amended by proper care of expectant mothers during the last twelve weeks of pregnancy." Education of parents—fathers as well as mothers—for parenthood and the pre-natal care of expectant mothers seem fundamental.

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[1] Transactions, 1911.

[2] Transactions, American Association for Study and Prevention of Infant Mortality, 1910, p. 151.

We have long had the knowledge of many causes of preventable maternal and infantile mortality and morbidity. What is needed is the application of our knowledge, how to prevent causes instead of curing consequences of preventable evils. Society is too often like a great diagnostician who is satisfied when he has studied his patient and arrived at a correct diagnosis.

Two important questions need to be answered: To what extent are the present conditions of obstetric practice the responsibility of society? and; what are the legitimate preventiv measures whose application is the duty of the community?

In some countries laws exist for the protection of women before and after childbirth: for example, laws forbidding the employment of the pregnant woman at hard labor, and providing for rest of several weeks with continued wages for the working woman at the lying-in period, etc. Why should society concern itself about the pre- and post-confinement periods only, and feel no responsibility for the standard of care received at confinement? Who is to blame for the preventable infections and the inadequately met emergencies and accidents of childbirth?

Shall the state enforce better care? An English obstetrician goes so far as to suggest the compulsory notification (intimation) of pregnancy, the suggestion being probably based upon the theory that the child even as soon as conceived, is the ward of the state. This principle is tacitly admitted in the law which makes it a crime to perform abortion. Havelock Ellis says:[1] "The reproduction of the race is a social function and we are compelled to conclude that it is the duty of the community as a community to provide for the child-bearer when, in the exercise of her social function, she is unable to provide for herself." Dr. J. W. Williams, in speaking of the inability of women of the lower middle class to pay for adequate attention in confinement in their homes, and the lack of hospital provision,[2] says: "As the members of this class form, in great part, the hope of the commonwealth, it is essential that they ultimately receive better care in all branches of medicine. At present, they do more for the state than they receive in return; and it is probable that the question will remain unsolved until we are prepared to face some form of modified socialism."

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[1] "The Task of Social Hygiene," p. 64.

[2] Transactions, American Association for Study and Prevention of Infant Mortality, 1911, p. 191.

Society is apathetic with reference to the whole great field of preventiv medicine. That public health is a purchasable commodity is not more true of contagious disease than of the dangers of childbirth.

There has never been an adequate study of the conditions of obstetric practice in this country. We know vaguely certain facts; in certain states, there are vague and poorly enforced laws governing midwifery practice; in others, no laws at all. We vaguely endeavor to justify our inertia by pointing to other countries and cities and states where conditions are no better. It is estimated that at least one-third of the cases of childbirth in the United States are cared for by midwives. And still the evils that have been, continue to be, and no one assumes the responsibility for reform. The truth was put in a nutshell by H. S. Pritchett when he said, "To put the whole matter tersely the practice of medicine is a quasi-public profession." Medicine will never gain its rightful place until the intelligent layman, the legislator, the citizen, realize the public nature of the practice of medicine and their own obligation as to its support and standards and its regulation.

There are many evidences that an era of better things for American obstetrics has begun. One hopeful sign is the recognition by a considerable portion of the medical profession and some lay people that obstetrics is a branch of surgery, and that, as in surgery, the best care can be secured only in the hospital. The hospital standard of care in confinement cases includes the surgical delivery room, hand disinfection, sterilization of instruments and dressings, sterilization of the field of operation, exactly as in major surgery. All this is merely the practical application of the theory of O. W. Holmes, as demonstrated by Semmelweis, and is destined to prevail.

Another hopeful sign is the demand on the part of the intelligent laity for better obstetric care. In one of our large cities, a society of lay women has been formed for the purpose of stating the need for skilled care, and demanding better training in obstetrics in our medical schools.

We note an increasing number of patients who recognize that the care given to these cases in the hospital is superior to that which is possible in the home; and hence there is an increasing demand for rooms at moderate rates and for free beds in obstetric wards. Hospital authorities are slowly realizing that this demand is reasonable and must be met. The most extensiv provision for maternity care in any city in the United States is in Pittsburgh where the new Elizabeth Steel Magee Hospital, with its branch dispensaries, is prepared to furnish ideal provision for the needs of the whole city.

Interesting experimental work in caring for confinement cases has been begun in many cities. For example, the Maverick Dispensary in Boston has establisht a service where, for the ordinary fee paid a midwife, a patient may obtain the services of a physician, a nurse or caretaker, and may have the advantage of the medical supervision of pregnancy.

Manchester, N. H., furnishes an illustration of a large town or small city which is covered by a scheme of voluntary care on the part of younger physicians who give their services for a period of three months, and whose work is supervised by those more experienced.

Louisville, Ky., and Baltimore, Md., have establisht maternity clinics in connection with their Babies' Milk Fund Associations as the logical outcome of this work. This is an admirable provision as it permits qualified physicians, nurses and pediatrists to safeguard the mother thruout the period of pregnancy, to care properly for her in confinement, and to follow the baby to the end of its first year in the welfare clinic. The results of such work justify all expenditure of money and effort as the death-rate of the babies so supervised is reduced to its lowest terms.

I shall attempt no estimate of the merits of twilight sleep, but I consider its value as a form of treatment overshadowed by the great impetus it has given to the movement for better obstetrics. The first enthusiasm for the pain-alleviating treatment of confinement has been merged in the demand for something better than the old form of care—for a more exalted sense of the dignity of motherhood exprest in terms of adequate care in childbirth.

A very modern instance of a private corporation assuming a task which should be the work of the community is furnisht by the life insurance companies which find it good business to foster the bearing of children in safety; and which, by mothers' pensions and nurses' stipends, are reducing the casualties in childbirth and making the mother a "better risk."

The education of lay women to the need for better care is the leaven which will eventually leaven the whole lump. One notes a growing tendency to popularize the knowledge of facts of imperfect care and the need for reform. This is well illustrated in a series of articles under the heading "Safety First for Mothers" recently begun in one of the leading popular magazines. This is a most useful and encouraging form of propaganda if wisely carried out.

Many facts might be adduced which will eventually contribute to the reform we desire to bring about, such as: the general improvement of medical education in this country, which includes also some provision for better teaching of obstetrics; the effort in some states to raise the standard of local health officers and to employ full-time men of high grade; better roads in the rural districts, and the fact that many country physicians and farmers have automobiles, thus making it possible for physicians to reach cases formerly inaccessible; the increasing number of good hospitals in large and small towns, all of which should be required to make provision for obstetric cases; the ambulance idea, so useful and efficient in war, might be successfully used in rural communities for carrying hospital standards of care to women who are unable to go to hospitals.

By far the most important practical development of the modern movement to secure better obstetric care is in the pre-natal care of expectant mothers. The growth of this movement is fenomenal. A great impetus was given to it in 1913, when the Children's Bureau issued a pamflet on "Pre-natal Care." This publication markt a new era for mothers in that, for the first time, the National Government officially extended to them a helping hand and recognized their need for aid. Mrs. Max West reports that women from all over the country have availed themselves of this pamflet and are pathetically eager to have the information contained in it. Many small folders with concise statements of facts of pre-natal care are issued by the various child-saving organizations thruout the country.

The education of the expectant mother in the home and in the dispensary clinic by the physician or nurse is an example of ideal preventiv work. The lives of both mother and unborn child are safeguarded by the increast intelligence gained from these legitimate sources. Old standards of obstetrics will no longer be possible when once the dangers of unintelligent care become known to the rank and file of potential mothers. H. Schwartz says: "Tradition and ignorance are alike combined in spreading the fable that child-bearing is a physiologic process." The pusillanimous argument that women must not be told of the dangers of childbirth, or they will be afraid to bear children, is unworthy of both their intelligence and bravery.

The proceedings of the Section on Obstetrics of the American Association for Study and Prevention of Infant Mortality form a notable contribution to the literature on the subject of American obstetrics; and the papers, discussions and reports presented, not only record the facts and results of practice, but they contain many helpful suggestions for remedying unfit conditions. They should be read by every one interested in the movement to establish in the United States a system of obstetrics which shall be the best, the most scientific, the most adequate the world has ever seen; for there is no nation which has elevated to its proper place this essential branch of medicine.

American women should realize that they have a great duty to the race to perform in demanding that, in the general movement for reform of medical education, obstetrics should receive due consideration and should be put upon a plane which it has never occupied as a major subject.

In view of the increasing interest in this subject thruout the country and of the encouraging facts enumerated, let the would-be reformers of obstetrics take heart of grace and say in the words of Mr. Asquith: "The situation calls for three things: a proper sense of perspectiv, a limitless stock of patience and overflowing reservoirs of courage, both activ and passiv."

MARY SHERWOOD.

THE ARUNDEL, BALTIMORE, MD.,
November, 1915.

THE PHYSICIAN AS A PIONEER.[1]

By WOODS HUTCHINSON, A.M., M.D., New York.

To the superstitious eye, it might appear significant that physician, pioneer and Panama all begin with the same letter. Certainly, if there had been no pioneer, there would have been no Panama Exposition, and if there had been no physician, there would have been no Panama Canal.

The real enemy of the pioneer, the chief obstacle to the spread of civilization is not Indians, or wolves, or rattlesnakes or even famine or flood—or winter cold, or tropic heat, but insects. Most schemes of colonization that have failed, failed not from famine, or the attack of enemies, but thru disease. And more than half of them from one disease—malaria.

The proper enemy of mankind is BUGS. And our inborn instinct to biff everything that flies, and crush everything that crawls, is of the soundest. This is not merely the age of man, but the age of insects, geologically considered, and the battle is to the death between them for the possession of the earth.

In the Tropics, the insects get the whip hand of man and keep him stupid, short-lived, uncivilized. It was the plague of flies, the bloody tyranny of insects, that drove man out of the warm, comfortable, fertile Tropics into the chilly, rain-swept, half-the-year frozen North. Here he can be rid of them and their pestilent attacks for half the year, except such few hardy species as follow him into his houses, and get a breathing spell to plan campaigns against them for the other half. Now grown to full human stature, flusht with his victory over the elements in winter and the insects in summer, he is coming back to invade and reconquer the Tropics and put to flight the ancient foes of the race.

Incidentally, it was probably this same pest of insects that drove the migratory birds into that strange and romantically adventurous habit of winging their weary way thousands of miles over valleys and mountains and a waste of seas without chart or compass every spring, right up to the Arctic Circle itself, in order to nest and rear their young in peace and safety. It is an interesting coincidence, to say the least, that these, our little

[1] President's address at the 40th Annual Meeting of the American Academy of Medicine, San Francisco, June 25, 1915.

brothers of the air, have become our strongest and most valuable allies in the fight against the common insect enemy, not only those pests that prey directly upon man, but those that attack him indirectly and with almost equal deadliness thru his fields and his crops.

Tho their co-operation has nothing romantic or altruistic about it, they save our crops merely to fill their own—yet we should at once form a dual alliance with them of the warmest and most perpetual kind. Some day, perhaps, poets may come to apostrofize and immortalize not so much the songs that birds sing, but the worms that they eat, their gorgings, instead of their warblings.

In an earlier day, the first requisite of a new colony, or a pioneering expedition, was a captain, a bold and skilful fighting man with muskets for every grown man in the party, and plenty of powder and ball. But now, the first and most fundamental requirement of a new colony is a doctor-engineer with microscope and test tubes, spades and trenching machines, and plenty of quinin, kerosen and mosquito-netting.

The beginning of successful white colonization of the Tropics dates from the discovery of quinin. Our own Mississippi Valley could never have been settled without it, and scores of colonies in our Middle West have been broken up and driven back east by the deadly "congestiv chill" or pernicious malaria, within the last century, just as the settlers at Jamestown were on the verge of being, twice, when they were reinforced by shiploads of new colonists—fresh food for mosquitoes.

In the near future, no colony or land company will be permitted to take settlers into their new homes, until a thoro and complete survey shall have been made of the region, sanitary, medical, entomological, expert agricultural. And at least a sufficient area to accommodate in safety the first group of settlers shall have been drained and kerosened and supplied with good water, so as to be protected against malaria, typhoid, hookworm and water- and fly-borne diarrhoea and dysentery.

In the light of our present knowledge, it should be regarded as little short of manslaughter to permit men, women and little children who are unfamiliar with the country, unseasoned to the climate, to enter and face the dangers of settlement in a new country or district without this preliminary survey and protection, whether in their own land or across the seas. It would cost a few thousands or hundreds of thousands of dollars, but not very much more than the advertising literature, and would save ten times its cost in human life and suffering and failure, besides being the best possible advertisement for the enterprise.

New countries can and ought to be made models of health, efficiency and comfort for the older communities, and could easily be made so at moderate expense, if the physician-pioneer be given a free hand in advance, as Gorgas was at Panama. Let the doctor go first and lay the foundation for a healthy, happy, disease-free community, and you will do more to insure the success of a new colony, whether at home or abroad, in the Tropics or in the temperate zone, than by any other single step. In fact we can pretty nearly assure success, if the soil be good and the water sufficient.

It must be remembered in fairness that bad as insects are, they do *not* originate the diseases they spread, but only carry them from one infected human being to other healthy ones. Deprive them of their source of infection, and they become comparatively harmless. If the new country be uninhabited or sparsely settled, it is easy to cure or isolate such cases of malaria or yellow fever, typhoid, summer diarrhoea or other disease carriable by insects. Then after a few weeks or at the outside months' waiting the infected insects will all be dead. Generally speaking, however, new settlers bring their diseases with them, and a most effectiv way of protecting a new settlement against not merely insect-borne, but all other communicable diseases, would be a thoro physical examination of all intending settlers and their families. This should include blood examinations for malaria, for syphilis, for typhoid carriers; and microscopic and smear-tests for diphtheria and pneumonia carriers and hookworm. If any such were discovered, a few weeks' isolation or appropriate treatment with quinin, salvarsan, thymol, etc., would be sufficient in the vast majority of cases to clear up all risk. Such examinations would be worth twice their cost to the individuals examined alone; and, in combination with a proper sanitary survey, would turn new countries and new colonies into little health-heavens on earth.

THE RELATION OF THE TRANSPORTATION AND STORAGE OF FRUITS AND VEGETABLES TO THE CONSERVATION OF THESE FOOD SUPPLIES.[1]

By A. V. Stubenrauch, Professor of Pomology in the University of California; Consulting Pomologist of the U. S. Department of Agriculture, Berkeley, Cal.

INTRODUCTION.

In the discussions given in this paper, the relationship of the various factors coming under the designation of transportation and storage will be included so that the scope of the paper may perhaps be broader than at first sight seems apparent. Detailed descriptions of the various processes of packing, shipping, transporting and storing fruits and vegetables will not be attempted, except as these descriptions may be necessary to give a full understanding of the factors which influence and govern the supply, and the successful distribution of the crops to the end that consumers in the various markets of the country, or of the world, may be able to obtain a sufficient supply of these necessities in the human diet.

When I was requested to prepare a paper upon the topic of the "Transportation and Storage of Fruits and Vegetables" for a congress of physicians, the first question which arose in my mind was in what ways could the interest of the physician be gained in a discussion of this subject. Unless there was a specific object in view and some specific purpose to be gained, it was felt that a discussion of the factors of transportation and storage bearing upon fruits and vegetables might fail to enlist the interest of medical hearers. I believe there are topics in the handling of fruits and vegetables which not only should interest those of the medical profession, but I can see where a distinct service can be given by showing, in a very elementary manner perhaps, how the methods used in preparing fruits and vegetables for shipment and in distributing them among the various markets have an important influence upon their quality as well as upon the supply available for consumption. We, of the laymen not versed specifically in medicine, hail it as a distinct advantage, and if I might be allowed to say it, a hopeful indication that a body of physicians should give a place on their program for a discussion of the factors underlying the successful distribution of food supplies. I am not here to discuss that fase of the subject; but I cannot refrain from expressing satisfaction over the fact that such prominence is given a topic of this kind.

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[1] Read at the 40th Annual Meeting of the American Academy of Medicine, San Francisco, June 26, 1915.

Somebody has said that the best way to obtain and conserv good health is right living. "Right" living may include a number of things, but I think all are agreed that the most important factor of all is a proper diet, using the term "diet" in its broadest sense. It is frequently necessary for the physician to prescribe a specific diet to overcome or to avoid certain ailments which are very often the result of over-indulgence in certain classes of foods known to be unwholesome or objectionable. The fully qualified physician must then have a wide knowledge of the composition of various food materials and their functions in digestion and nourishment. In these cases the function of the physician is to repair some damage which has occurred. The modern physician is extending his province. He is becoming a missionary in the field of right living, prescribing not only medicine and drugs, but proper regulation of habits, of physical activities, of food and drink. We need his advice to enable us to avoid the damage—to avoid the wrecks along life's right of way—his aid is necessary in our "Health Safety First" campaign. Looking at the matter then from the broad standpoint of the public health, we are interested in the large questions of supply and the problems of so distributing food materials that sufficient quantities of the right kinds of foods shall be within the reach of the masses of consumers at all times.

THE VALUE OF FRUITS AND VEGETABLES IN THE DIET.

The assumption that fruits and vegetables have a valuable place in the human diet is accepted. It seems unnecessary at this time to offer evidence in support of the accuracy of this assumption. The value, or more strictly speaking, the necessity of the free use of fruits, nuts and vegetables is fully recognized by all dieticians. But it has not been many years since the use of fruits was considered as a luxury instead of a necessity. Campaigns of educational advertising have been made which it is true had for their main object the increase of the use of fruits primarily in order to enable the profitable marketing of the increased production of fruit crops. While the increase in the consumption of fruits has benefited the producers, the consumers are also receiving fully as much benefit, because I believe we are all agreed that the increase in the use of fruits in the diet, especially by our large population of city dwellers, is greatly to be desired. There is an old saying, for example, that "An apple a day keeps the doctor away." Wide use has been made of this catchy frase in advertising literature. At first sight one might suppose that the furtherance of this doctrine would, if true, not find favor with such an audience as this. But we are considering you as conservers of the public health instead of mere restorers of health.

We should not then look upon the use of fruits as luxuries; neither should we use them for medicinal effects, as is often urged. Fruits are foods, supplying to a very great extent some of the important body-building and energy-producing elements. In addition, valuable necessary mineral substances are supplied in easily assimilable form thru the medium of fresh fruits and vegetables. The proportions of some of the mineral substances which the body requires are more abundant in fresh fruits and succulent vegetables than is the case with most other foods. A serious lack of these mineral substances for a considerable length of time may result in serious disease. Scurvy, which was so common on old sailing vessels, using a diet made up largely of bread and salt meats, is an example of this. It is well known that the free use of green vegetables, potatoes, or other fresh fruits and foods prevents the occurrence of scurvy.

In addition, fruits and vegetables supply large volumes of roughage and non-absorbable materials, which are helpful in digestion and in stimulating intestinal action. Another factor is the variety of flavors, which give zest to the appetite and further aid in promoting a more healthy and wholesome action of digestion.

From all standpoints, we can accept the dictum that the extension of the use of fresh fruits and vegetables is beneficial to mankind and therefore worthy of encouragement by those interested in the welfare of the people.

It is undoubtedly true that the complete substitution of a fruit and vegetable diet for a mixt diet must be very carefully considered. There is valid reason for believing that a sudden change from one form of diet to another might result harmfully in many cases. It would not be reasonable to suppose that an individual who has been accustomed to a mixt diet composed largely of the more concentrated foods thruout life could change abruptly to the less concentrated fruit and vegetable diet without experiencing some difficulty and even ill effects. There can be no doubt that one can become accustomed to the less concentrated foods as represented in fruits and vegetables, especially if begun early in life. The writer has a son who thru choice, from babyhood, has subsisted almost entirely on a fruit and vegetable diet. He is now approaching young manhood, has always had excellent health and is a strong, well developt youth.

Along with the acceptance of the doctrine of the increast use of fruits, we should also accept the dictum that fruits could with very great advantage replace the large use of sweets, pastries and such foods which are likely to cause serious digestiv troubles.

But a discussion of the uses of fruits and vegetables as foods is not the burden of my paper. There are undoubtedly others here who are much better qualified to discuss this important topic. From what has been said, we have justified fully the assumption that the extended use of fruit and vegetables is beneficial; therefore, the factors which are fundamental in providing a continuous supply of these wholesome foods in sound condition and within easy reach of the masses, should be of considerable interest. It is a well known fact that green vegetables are very abundant in the United States and Canada, and while in season are comparatively inexpensiv. There is apparently a greater use, and a more common use of these in this country by families of all circumstances than in most other countries. This is a certain advantage. It will be the purpose of this paper to indicate some of the fundamental factors which have rendered possible the greater and freer use of fruits and vegetables by our people. The part that efficient transportation and storage are playing in this important fase of our lives will be pointed out, as these factors are, more than any other, responsible for the cheapening and placing of fruits and vegetables within the reach of the common people. The discussion will be confined to fresh fruits and vegetables. Dried, conserved, or canned foods may be shipt successfully over long distances without special shipping appliances to maintain them in wholesome condition. Such foods may be sent by slower and cheaper means of transportation and only ordinary warehouses are necessary, as a rule, to hold them for distribution. For the successful shipment and transportation to market of fresh fruits, special equipment in the way of packages, refrigerator cars and comparatively rapid transit are necessary, and refrigerated warehouses or cold storages are necessary to conserv and hold them while awaiting distribution.

EXTENT OF FRUIT AND VEGETABLE INDUSTRIES OF THE UNITED STATES.

The value of the fruit and vegetable crops of the United States, according to the last census, reacht the stupendous total of $640,000,000, a sum more than twice the cost of the Panama Canal. These industries are growing rapidly and the territory supplying these tremendous crops is widely scattered. It happens that many of the lands specially adapted for the production of high-class fruits and vegetables in large quantities are located at great distances from the centers of consumption, or the industrial centers, the population of which constitute the great bulk of the consuming masses. Some crops can only be grown under special conditions existing in certain localities due to climatic or other causes. Thus most of our oranges and grapefruit are produced in California and Florida; olives and lemons only in California; figs in California and in certain sections of the South; grapes may be grown only in certain sections, and the European type of grapes practically only in California; the production of apples and peaches, altho widespread, is limited to certain sections of the country. This list might be extended to great lengths, but the examples mentioned serve to illustrate the point.

We have not yet reacht a point in the development of our fruit industries where only the crops or varieties best adapted to certain districts are produced in those districts. It is true that there has been and there still is considerable haphazard plantings of crops, resulting, in many instances, in the planting of orchards on lands or in districts not adapted to the highest production or the most economic operations. This means that eventually plantations located in unfavorable places will not be able to hold their own when competition becomes very close. Efficient transportation service, which is available at a reasonable cost, will perhaps be the most important regulator of these mistakes. Changes are bound to take place, so that gradually each district in the country will produce the crops which it is best adapted to produce and which, therefore, it can produce most economically. Mistakes in the planting of annual crops are serious enuf, but they are not nearly as serious as mistakes in the planting of orchards. With annual crops the planter has the opportunity to change from one crop to another without great difficulty, and failure with one does not necessarily mean permanent disaster. An orchard planting, however, is a long-time investment, requiring in some instances ten to fifteen years to reach its full profit-yielding stage. While it is possible to change from one variety of fruit to another or even from one kind to another in some instances, there are limitations in this respect, and under the best conditions, these changes require years to accomplish. The greatest care, therefore, is necessary in the selection of sites for orchard plantings, in the selection of the kind of fruit and after that, in the selection of the variety to plant in a given locality. The planting of an orchard is a serious undertaking, the investment a long-time one, and no man can afford to engage in this work unless he has a full knowledge of the great fundamental factors involved.

Perhaps these remarks may seem out of place here and not bearing on the topic under discussion. I confess they are somewhat out of place, but I cannot allow the opportunity to pass without calling attention to the importance of this fase of the matter. There has been going on in the United States during the past few years tremendous developments of orchard planting schemes. This movement has not been confined to any part of the country; it is going on in all parts where there is any excuse at all for fruit-growing. Most of these schemes are designed to induce city people in various walks of life to purchase tracts of different sizes, usually small, which are to be planted and cared for by the corporation responsible for the development. The plan generally in vogue is to sell on the installment plan, the plantation to be turned over to the purchaser at the end of five or six years, when it is supposed to have reacht a profitable stage. The purchaser then must either manage the plantation himself or he must hire it done. In either case, there is great doubt whether the plantation will be properly handled. In the first place, the owner is usually wholly unfamiliar with the requirements of orchard management; in the second instance, which is usually the plan of management followed, he is dependent upon others. This kind of farming has been named "proxy farming." We have yet to find one example of the success of this class of farming, especially orchard farming or fruit-growing. It is wrong in principle as far as the profitable production of crops is concerned. The originators or promotors of the work depend only upon the sale of the land for their profit; they are not primarily interested in the production of crops—are not dependent upon crop production for the success of the venture from their standpoint. Many of these promotion schemes are honest, altho doomed to failure; their originators have simply been mistaken in judgment. Others, and unfortunately there are many, are dishonest and are simply designed to unload cheap and unproductiv lands upon an unsuspecting public.

This does not mean that horticultural or fruit-growing industries are not profitable fields for investment. The stock of a number of well managed fruit-growing corporations is yielding excellent returns for its owners. These corporations are organized with a view to producing crops and depend upon the production of crops for their profit. Purchase of such stock is in no way similar to the purchase of land from a promotion company organized solely for the purpose of obtaining abnormally high profits from the sale of the lands and upon the development work itself.

THE INFLUENCE OF EFFICIENT TRANSPORTATION AND REFRIGERATION SERVICE.

The development of efficient transportation with refrigerator car equipment together with cold storage is the most important factor in the development of our fruit-growing enterprises on the gigantic scale of the present day on the one hand, while on the other, it is the one great factor which has enabled the large masses of city population to obtain supplies of these essential food products at reasonable prices, in large and constant quantities. The large increase of our city population has rendered these dwellers more and more dependent upon outside sources for their supplies of foods. The building up with city and suburban homes of the districts contiguous to large cities has greatly reduced the means of producing any considerable proportion of the supplies of fruit and vegetables near at hand. Indeed, it may be considered doubtful whether the development of our large cities with their teeming millions of population wholly out of contact with the soil could have been at all possible without efficient systems of transportation to bring in food supplies from a distance. In the old days the town districts were entirely dependent upon adjacent surrounding country or districts within hauling distance for their supplies of fresh foods. Out-of-season vegetables and fruits had to be stored at home or use had to be made of canning or preserving processes.

The introduction of the modern refrigerator car, together with the extension of rapid transportation service, and the modern cold storage warehouse have changed the old practices of home or nearby supplies and now-a-days very large proportions of our cities' supplies are obtained from considerable distances. This has made possible the shipping-in of products during seasons when local supplies are not available, thus enabling the city dwellers to obtain more uniformly and constantly abundant supplies. The time was when the supply of certain fruits and vegetables in a given place was limited to the local season of production. Now our large markets draw their supplies from all parts of the world, so that the seasons of all food commodities are very materially lengthened. Efficient transportation and refrigerator service have made possible the utilization of lands eminently adapted to the production of certain crops on a large scale. The development of the large fruit-growing industries of California, the Pacific Coast or the mountain districts, or the great fruit and truck-crop industries of the South would not have been possible otherwise. The refrigerator car has brought the large markets of the Atlantic seaboard within comparatively easy reach of the Pacific Coast producer. It has brought products of the southern truck-gardens to the doorstep of the northern markets. This has meant the development of fruit-growing upon a tremendous scale not only in California and other Pacific Coast states, but in other sections of the country specially adapted by climatic or other conditions for the production of different crops.

NECESSITY OF REFRIGERATOR TRANSPORTATION AND COLD STORAGE.

Refrigerator transportation service and cold storage are actual necessities to the producer of fresh fruits or vegetables in order to carry his crops to market and to distribute then economically. These agencies of transportation and storage are also urgent necessities to the great mass of consumers in enabling them to obtain at all times sufficient supplies of wholesome fruit and vegetable foods. The distant growers are enabled thereby to deliver their products at the door of the consumer.

The fundamental factors governing the selection of a site for a fruit plantation are three:

(1) Proper soil conditions;
(2) Proper climatic conditions; and
(3) Efficient marketing facilities.

These fundamental factors are thoroly discust before our classes of students who elect fruit-growing among their major studies. They are mentioned here to indicate the fundamental importance of the marketing end of the fruit-grower's business. Efficient marketing facilities include proper transporation and storage, especially the former. There will be no crops unless the plantation is located on proper soil and in a region of favorable climatic conditions. There are many such localities which are suitable for the sites of fruit plantations but which cannot be used to advantage on account of the absence of adequate facilities for getting the crops to market.

The pioneer shipper of fruits under refrigeration, Mr. Parker Earle, is now a resident of Pasadena, California. Mr. Earle, altho now past eighty years of age, is still activ and maintains his interest in fruit-growing. He was the first to use a refrigerator car for the transportation of fruit from California, about the year 1882. Prior to that time the fruit crops were carried in what were then known as "ventilated cars," which were only ordinary freight cars provided with slatted doors at the sides and ends for ventilating. The use of a car which enabled the load to be cooled added much to the certainty of carrying the fruits in sound condition and increast the distance they could be hauled.

DESCRIPTION OF REFRIGERATOR CAR.

A refrigerator car is a portable, cool storage chamber. The walls are insulated with various materials which are poor conductors of heat to protect the contents of the car as far as possible against heat leakage, while in transit. The cooling equipment of the car consists of an ice bunker at each end, of such construction that the air of the car is enabled to enter at the top of the bunker and pass out at the bottom. The ordinary car now in service is supplied with bunkers holding 5000 to 5500 pounds of ice. These bunkers are filled from icing stations placed at different points along the route. Thus a car of fruit moving from California to New York is re-iced from seven to ten times.

The cooling of the carload is dependent upon the circulation of the air in the air thru the ice bunkers and between the packages of fruit, the same air being used over and over again. The circulation of the air within the car is due to the difference in temperature of the air columns in the ice bunkers and the car body; the cold air, being denser, flows downward thru the ice, out at the bottom of the bunker and along the floor of the car, absorbing heat from the fruit packages as it passes. The air thus becomes warmer, rises to the upper part of the car, and passes back along the top to the ice bunker, where it is again cooled. In passing thru the ice, the impurities and vapors given off by the fruit are condenst on the ice and are absorbed in the meltage. The air is thereby purified, so that its continued use is not detrimental. The temperature maintained in these cars—depending upon outside temperatures—averages about 40° F. The temperature is not uniform thruout the load. It is coldest near the floor of the car and next to the bottom openings from the bunkers; it is highest at the upper part of the load, thus rendering it impracticable to fill the car completely. Sometimes there is sufficient difference in the temperature of the lower and top parts of the load to cause serious deterioration of the fruit or vegetable carried in the upper part while that in the lower portion may carry in sound condition.

Where the fruits are to be shipt under refrigeration, the packages are stackt in the cars to allow the air to circulate between them. There are limitations in this respect and the loading cannot be done to give the best possible circulation on account of traffic requirements. The carload lots range from ten to thirteen tons, which are the minimum carload weights required by the different transportation lines.

During cool weather and during the winter months, fruits and vegetables are transported without ice. The ordinary refrigerator car is used for this purpose and the contents are cooled by allowing the cold out-door air to pass thru, this being accomplisht by means of special ventilating hoods which can be opened or closed at will. During extremely cold weather, the insulated refrigerator car protects the commodities against freezing to a greater or less degree, depending upon the character of the insulation and the extremity of the weather.

For long-distance shipment, the fruit must be carefully packt. The various sizes and types of packages in use are designed to enable the contents to be handled in most economic form. With many of the larger fruits, wrapping in a specially prepared soft and absorbent paper is practiced. This protects the fruits from injury and bruising and in addition prevents excessiv evaporation and shriveling or wilting. Wrapping is not a universal practice and from some sections the larger fruits are all packt without wrapping.

In packing for market, the western fruits are graded and sized so that all contained within a package are uniform in variety, size and quality. We find that fruits which must be shipt long distances are invariably more uniformly graded and better packt than those shipt in from nearby markets. This is undoubtedly the fundamental reason for the better packing and shipping methods of our western fruit-growers. They are compelled to handle carefully, and to pack and grade well because the expense and risks of shipment over long distances render unprofitable and uncertain the shipment of low-grade, poorly packt commodities. The producer located nearby does not take the same risk when he ships into the city his crop packt without special care. In any event, he has not the large freight bills to pay or the risk of having his product deteriorate during the time required to get it to market.

The business of producing and handling fruits, especially as it is carried on in the West and South, is a large wholesale business, and the functions of the various agencies engaged in producing and shipping are concerned primarily with getting the products to the wholesale dealers of the primary markets in sound condition and in uniform supply. After the fruit arrives in the primary markets it moves thru the various channels of the wholesale and retail trade to the consumers. These channels are frequently intricate and they differ widely in different markets. The consumer in the city is interested primarily in being able to obtain an adequate supply of good sound fruit at a fair price. I will attempt to discuss some of the fundamental factors governing the successful shipment and storage of fruits and vegetables, and to indicate how the solution of the problems underlying the success of this work may materially affect the consumer.

PRECOOLING.

Under the conditions of shipment in refrigerator cars as indicated above, it will be seen that the ice used in refrigerating the fruit while in transit is required to do two kinds of work: It must cool the warm fruit after it is loaded and it must keep it cool while in transit. The conditions of traffic and expense place limitations upon the design and character of the refrigerator cars in practical use, and the result is that the work of cooling is not done as efficiently as is desirable for the best shipping qualities of the fruit. The temperatures obtainable from melting ice alone are not low enough to do very rapid cooling, and in consequence of this, a very considerable period may elapse before the fruit contents of the car are cooled sufficiently to protect them against deterioration, over-ripeness or decay.

In order to avoid the results of this delay in the reduction of the initial temperature of the fruit, a system of prompt and rapid cooling by special means in advance of shipment has been designed. This system has been designated as "precooling." This relieves the ice of the car from doing the double work, and it is needed only to maintain the load in a cool condition. Much experimental work remains to be done in the application of precooling to different fruit and vegetable handling and shipping, but the process is already in commercial use, especially in California. The principal advantages to be obtained from prompt and rapid cooling—precooling—are:

(1) *A more uniform condition of products in different parts of the carload.* The inequalities of car temperature referred to above are very greatly reduced.

(2) *The successful shipment of fruit of higher quality obtained by allowing the fruit to ripen to a later stage of maturity on the tree before picking.* This is perhaps one of the greatest benefits to be derived from precooling. Where it is not used, many of the quick-ripening fruits, such as peaches, apricots and plums, must be pickt very green in order to allow for excessiv ripening during

transit. Picking in a green or immature stage prevents the fruit from acquiring full flavor and quality and as a result of this treatment, many of our western fruits have gained a reputation of fine appearance but lack of high quality. When the fruit can be promptly and rapidly cooled, it may be allowed to remain on the tree until it is fully mature and hard ripe. The resulting improvement in quality is obvious.

(3) *Better carrying quality of different fruits and therefore distribution over a much wider territory.*

THE LIFE PROCESSES OF FRUITS.

During the maturing of a normal fruit on the tree, certain chemic and physiologic changes are constantly taking place within the fruit itself. These changes, which result in the acquisition of quality and flavor, constitute the ripening processes. After a certain point is reacht, the fruit becomes over-ripe, quality and flavor are lost and deterioration progresses until eventually the fruit is destroyed by fungous decay or by fermentation or thru destructiv physiologic changes.

A fruit is a living organism which has a definit span of existence, the length of this life depending upon the conditions surrounding the organism. The most important factor which modifies this span of life is temperature. The life activities of the individual fruit continue after it is severed from the parent tree. In fact, the fruit is fit for fruit only while these life activities are proceeding normally and the fruit is actually alive. After it dies, physiologic deterioration takes place and the fruit is unfit for food.

When the fruit is removed from the parent plant, the life processes constituting ripening are materially hastened, and the life span is greatly shortened if the fruit is allowed to remain warm for any considerable length of time. When the temperature is reduced, the life activities are greatly lessened, thereby lengthening the period during which the fruit may remain in normal condition. The importance of promptly and rapidly reducing the initial temperature of the fruit becomes doubly urgent and in many instances, *e. g.*, where the life span is normally short, it is a necessary condition of shipment over long distances.

THE INFLUENCE OF TEMPERATURE ON THE LIFE ACTIVITIES OF FRUITS.

The lessening of the life activities of the fruits thru reduction in temperature is the fundamental factor upon which their successful preservation in cold storage depends. The cooling does not completely arrest the life processes; they go on very slowly at the low temperature, thus lengthening the period thru which the fruit organism may perform its functions.

The length of the life span differs with the character of the fruit. It is shortest in the soft fruits such as berries, cherries, peaches, apricots, plums and most pears, and longest for the harder fruits—citrus fruits and apples. This means that the soft fruits are the most activ and have the shortest life span; consequently the length of time these fruits may be held even under the most favorable conditions of temperature is limited. The life activities and consequent life-span vary also with different varieties within the same group of fruits. Some varieties of apples, for example, may be held longer than others; lemons may be held longer than oranges. The importance of quick and prompt cooling—precooling—is therefore greatest in the case of the soft fruits and least for the harder fruits. Experience confirms this principle so far.

CAUSES OF THE DECAY OF FRUITS AND VEGETABLES.

Aside from breaking down and deterioration from over-ripeness, fruits are subject to premature decay due to the attacks of various fungi. Fungi are minute plants, which grow upon or within the tissues of other plants. They do not possess roots, leaves and stems as do higher plants but consist of a mass of stem- or thread-like growth, which produce the fruiting bodies or spores that are analogous to the seeds of higher plants. Like the higher plants, fungi are dependent upon moisture and heat for their growth and the spores cannot germinate or the fungus develop if either of these necessary conditions is lacking.

There are two classes of fungi—parasitic and saprophytic. The true parasites attack and destroy living tissue. The saprophytes subsist upon dead or weak tissues, altho many, after they have an opportunity to start, are able to kill the surrounding living cells and thus spread thru and destroy the entire organism. The most common forms of decay fungi attacking fruits are molds of the blue mold type, belonging to the saprophytic class. These forms of mold have not the power to penetrate the sound, unbroken skin of a healthy, normal fruit. Most of the decay occurring in the fruits while in transit and storage starts at injuries and breaks in the skin, caused almost entirely by rough handling in preparing the fruit for market, either in picking, grading, hauling or packing. Wounds, bruises, scratches or abrasions of any kind allow the organism to gain entrance and once within the tissues the killing of surrounding cells takes place, and the entire fruit is soon destroyed. Other fungi which are not dependent upon injuries to start, attack fruits in transit and storage; but these forms of decay are much less prevalent.

The germination of the decay spores is dependent upon proper moisture and temperature conditions, just as is the case with the analogous seeds of higher plants. Germination of the spores does not take place while the fruit is perfectly dry or when the temperature is low. After the spores have germinated, however, and the decay has started within the fruit, even as low a temperature as 32° F. will not wholly check it. Growth of the mold is only retarded and the decay continues slowly until eventually the entire fruit may be destroyed.

From what has been said above regarding the character of the decay occurring in fruits while in transit and storage, it will be seen that the most important factors underlying their carrying and delivery in sound condition is an unbroken healthy skin. I am sure my physician hearers will readily appreciate the importance of this point: All operations of picking, grading, packing and shipping must be carried on with care to prevent injuries of various kinds. In general, it has been found through the investigations of the United States Department of Agriculture that the chances for injury are directly proportional to the number of steps thru which the fruit must pass in preparing it for market. Fruits which must be washt, brusht, or otherwise past thru cleaning processes to make them presentable to buyers are most likely to be injured and, where such treatment is necessary, the work must be done with the greatest care to avoid breaking or otherwise injuring the skin. Some fruits are naturally more susceptible to injury—are more easily injured—than others. The influence of handling methods upon carrying and keeping quality is paramount. In a general way growers have realized that it was necessary to handle fruit carefully, but they had no conception of the extent of injuries being done until the Department investigators made careful counts and actual determinations. It was not uncommon to find from 40 per cent. to 75 per cent. of the oranges or lemons injured in some way in the market preparatory stages thru which the fruit was past. Likewise, from 10 per cent. to 15 per cent. of the apples were injured in picking and packing, and frequently table grapes were found with 5 per cent. to 40 per cent. crackt or crusht in handling. When it is remembered that each injury is a possible source of infection, the importance of conducting the handling operations in such a way as to avoid these injuries becomes duly impressiv.

During the course of the Department investigations, it was not uncommon to find 5 per cent. to 25 per cent. of the oranges, 10 per cent. to 40 per cent. of the lemons, or 8 per cent. to 20 per cent. of the table grapes actually decaying while in transit, all these losses being directly traceable to injuries of various kinds made in preparing the fruits for shipment. Changes in the handling and management of the citrus industries of California and Florida have resulted in a very great reduction of the decay losses. In some instances, and during certain seasons following the demonstrations of the Department workers, decay was practically eliminated.

HOW HEAVY DECAY AFFECTS THE CONSUMER.

The occurrence of high decay affects every agency connected with the handling of the fruit: producer, shipper, wholesale and retail dealer, and the purchasing consumer. It is perhaps easy to see how it affects the producer, because upon him falls the direct money loss of the fruit decayed, as well as the loss due to the poor reputation which his product attains. It affects the dealers to some extent, as they must in some way recoup themselves by charging a higher price for the good fruit which remains. Here is where it affects the consumer. He has to pay a higher price for an inferior article. He cannot afford to purchase as much as he should like or he becomes dissatisfied with his purchase and either does not buy again or limits himself to small quantities. In either case consumption is appreciably decreast. This depression is reflected along the line back to the producer, and so the vicious circle is completed.

The occurrence of heavy decay may appreciably affect the supply of fruits in the markets. One or two samples will suffice to indicate how great this really is. An average of 5 per cent. decay in all shipments of oranges from California means a loss based on an annual production of 40,000 carloads in the State of 2,000 cars or about 800,000 boxes of fruit. The average loss of fruit in table grape shipments due to decay, based on the annual production in the State of 8,000 carloads, is nearly 500 carloads or in the neighborhood of half a million 25-pound crates. Such examples could be cited for practically all fruits. A very serious reduction of available supplies is the result and the consumer is deprived to that extent of a wholesome food product.

Not only is the available quantity affected, but as has been indicated, the price is also affected. The uncertainty of whether the fruit on his hands will remain sound long enuf to be sold compels the dealer to increase the price to the consumer. He cannot afford to run any risk. The increase in price may mean that many of the common people cannot afford to buy and to them fruit becomes a luxury. The elimination of decay and the possibility of delivering the fruit in sound condition thruout the season stabilizes the industry. The result of the elimination of decay in oranges, for example, has had the effect of increasing the returns to the producer, thereby encouraging greater production of good fruit, and the prices which the consumer has had to pay have not been correspondingly increast; in fact they have frequently been reduced; paradoxical as this may seem. Thus the supplies are kept up to the maximum and the prices are stabilized, bringing the fruit within the reach of the greatest number of consumers.

IMPORTANCE OF THE SYSTEMATIC DISTRIBUTION OF FRUIT CROPS.

Efficient transportation service coupled with handling with sufficient care to enable shipment in sound condition has rendered possible a systematic distribution of the crops among the markets of the country. Unsystematic or haphazard sale in a few markets frequently results in serious gluts and consequent disaster to the producers. At first sight this may seem to be an advantage to the consumer as he is able for a short time to obtain his supplies at a very low cost. However, such a condition of uncertainty is not beneficial to the consumer in the long run. The sacrifice of a crop necessarily results in a curtailment of shipments and the season of glut is usually followed by comparativ scarcity. The instability and uncertainty result in preventing the masses from obtaining regular and constant supplies. The consumer suffers from this in the irregularity of his diet. During the times that serious gluts prevail in the larger markets, there are frequently many smaller towns and cities which are not supplied. The fruit which is wasted in the city may be needed to feed the people of the surrounding territory. A regular and systematic distribution results in only a quantity being shipt to a given market sufficient for its ample needs and the sending of additional supplies to unsupplied territory. In this way a much wider sale and a more stable condition is brought about. Such systematized distribution is only possible thru organized effort and this is perhaps one of the most beneficial results of co-operativ efforts on the part of producers in the marketing of their crops. Along with systematized selling thru organized agencies, standardization in picking, grading and packing are accomplisht, with the result that there is a much more certain and stable supply brought within reach of the great masses of consumers. When we consider the important place fruits should have in the diet of the masses, we can well appreciate the benefits of this organized movement among the producers and shippers of fruits and other crops to insure steady supplies at fair prices.

THE STORAGE OF FRUITS.

There are several methods of conserving fruits and vegetables: by drying, canning, "preserving," and cold storage. The last named is the only means of holding them in an unchanged condition and while dried, canned or preserved fruits and vegetables serve excellently as foods, they cannot entirely take the place of the fresh products. Cold or cool storage is the only means of accomplishing the important object of preserving these foods in their original or fresh condition.

There has been much discussion in recent years regarding the holding of food materials in cold storage. Part of this discussion has had reference to the wholesomeness of cold stored foods, but much of the agitation has dealt with the attempted investigation of the increast cost of living. It has been widely asserted that cold storage is very largely responsible for the increast cost of living due to the supposition that advantage is taken by a comparatively few corporations or individuals to buy up and to some extent "to corner" certain food necessities, hold them in cold storage, and thereby control the prices and the marketing of these products.

The assertion that cold storage fruits or vegetables, or any food commodities, are unwholesome as such is erroneous. Cold storage alone has never resulted in unwholesomeness, unless indeed the product was held beyond the limit of its possible usefulness. As far as fruits and vegetables are concerned, there is no possibility that any deleterious effect can follow the use of the cold-stored products. There are no hidden germs or ptomaines likely to affect the health of the consumers. Evidences of deterioration beyond the point of usefulness or safety of consumption are always plainly visible in these commodities. No one, therefore, is likely to eat a decayed or a physiologically dead fruit.

The assertion that attempts have been made to corner food supplies thru the medium of cold storage may be true in some instances. There has been so much said regarding the unfavorable side of the matter that many may have lost sight of any other point of view.

Legal regulation of the cold storage of food products is the remedy sought, and several states have past laws to control this business. In some instances, it is proposed to limit arbitrarily the length of time foods may be held in storage without consideration of their condition at the end of the time limit set. Bills have been introduced before Congress having federal control in view. Legal regulation is undoubtedly wise and the cold storage interests are in favor of the enactment of fair regulatory laws. The stand that cold storage as such is something to be avoided if possible is wholly wrong and results in casting discredit upon, and bringing into disrepute, a very valuable adjunct to our means of food conservation. Arbitrary legal regulation is liable to work hardships on both producers and consumers, and such laws may even defeat the objects which the regulation is intended to accomplish. We need not champion the cause of the cold storage warehousemen. They are well able to take care of their own interests. We should be interested, however, in knowing the truth about the matter, and a few of the factors involved should be of some interest here.

The adoption of an arbitrary length of time beyond which all food products may not be held is unreasonable; it may even result in serious mistakes and add to the uncertainty rather than to correct the evils which might otherwise prevail. The length of time which foodstuffs can be held in sound and wholesome condition is different for different classes of products. Different standards are necessary for eggs, poultry, meats of various kinds, fruits and vegetables. But even this may lead to confusion and trouble if the period is adopted without some consideration of the condition of the products at the time they are placed in storage. This manifestly increases the complexity of the problem.

Many of the laws proposed and adopted provide for the marking of cold-stored goods and the inspection of the foods in storage from time to time. The marking is required on the assumption that the cold-stored product as such is necessarily inferior. Few, if any, of the laws emphasize the importance of inspection before the commodities are offered for storage. If a rigid inspection and a certificate as to the soundness of the product and its fitness for storage purposes were required, much loss would be avoided and the adoption of the legal period of storage could be more equitably adjusted. It is impossible to improve the condition of a product by storage. If it is poor when it goes into storage, it will be in much poorer condition when it is withdrawn. If it is in good condition when it enters the cold storage plant, the chances of holding it in sound condition are excellent, provided the storage plant is properly operated.

Some of the advantages of refrigeration have already been discust. By it, in the refrigerator car (the trip to market in a refrigerator car may be considered as a short period in cold or cool storage) fruits and vegetables may be distributed over a very wide territory and the marketing thereby greatly extended. Thru the medium of cold storage the season may be greatly extended. With some of our fruits, the quantities produced have reacht volumes larger than can be consumed during the normal season of production. The apple industry of the United States has already reacht that stage. If all the apples produced had to go into immediate consumption on account of there being no means of holding them for a longer period of distribution, it can be seen that the markets would be overstockt with apples during the normal season, and prices would be far below the cost of production. We should have tremendous quantities for a comparatively short time and then a great scarcity. During the time of plenty, the fruit would be cheap while during the time of scarcity it would hardly be obtainable at any price.

By means of cold storage, we are able to regulate this condition and instead of having alternate seasons of plenty and scarcity, we now have a steady supply of this wholesome fruit at prices which are fairly reasonable to both producer and consumer. In fact, apples are now obtainable the year round. The lengthening of the marketing season places the fruit within reach of all. Storage facilities have made the apple one of the staple foods.

Cold storage enables the lengthening of the marketing season of other fruits, altho not to the same extent as with the apple. Certain varieties of pears may also be held for several months and a few varieties of table grapes may be held for the holiday and midwinter season. Oranges may be held for several months. Celery may be held for several months; potatoes and cabbage are also stored successfully. The softer fruits are not suitable for long holding in storage. All classes of berries and cherries may be frozen and held for several months in a suitable condition for use in ice-cream, sauces, pie making and other forms of pastry where solidity is not required.

The factors which influence good storage quality are: soundness in handling, prompt storage, and a proper storage temperature. The first two are the functions of the producer; the last is the function of the cold storage warehouseman. He must maintain the storage rooms at the proper temperature and in proper sanitary condition. With a few exceptions, the standard storage temperature for fruit and for celery and cabbage is 32° F. Fluctuation in the temperature of the storage rooms may result in serious deterioration. But, as has already been mentioned, all forms of deterioration in fruits held in storage are plainly visible and there is no likelihood that any unwholesomeness due to storage will occur.

CONCLUSION.

In closing, I desire to express my appreciation of the opportunity to present a few of the important factors relating to the transportation and storage of fruits. To the producers of fruits, especially on the Pacific Coast, the problems of finding markets for a very large increase in production are becoming very urgent. It will be necessary to induce people to use more fruit if all the crops in sight are to be sold to advantage. While at first sight this may seem like a selfish attitude to take in order to justify what has been said, I feel that I can make this assertion with a clear conscience, especially to a body such as this, whose members undoubtedly appreciate the wholesomeness and benefits of an increast use of fruits of all kinds in our diet. We can definitely promise greatly increast supplies, which in the very nature of things, will be available to the great masses of consumers in the cities at prices which will enable them to use fruits as regular foods and not as luxuries or condiments.

THE CONTROL OF THE PREPARATION AND PRESERVATION OF MEAT FOODS.[1]

By M. Dorset, M.D., Chief of the Biochemic Division, Bureau of Animal Industry, U. S Department of Agriculture, Washington, D. C.

No argument is required to show the necessity for the control of the preparation and preservation of foodstuffs. The health of the people depends in large measure upon the wholesomeness of their foods. This wholesomeness which is so much to be desired can be secured only thru official control and supervision of food preparation, because in the case of meat foods, the fact that the food is rendered unfit by disease can frequently only be discovered thru examination of the animal at the time of slaughter, when all of the organs of the body are intact, and furthermore, contamination of food products during the course of preparation, with bacteria of various kinds, is not discoverable by the consumer. It is likewise true, that the addition of preservatives which may be harmful to food substances, can be discovered only by an inspection of the food during the course of its preparation or by a chemical analysis. The inability of the producer to protect himself has created a demand on the part of the people for proper food control, and has served to arouse a general interest in the subject, and to cause special studies to be made of the various food-producing industries. This has resulted in specialization, and thus each separate branch of the industry presents problems peculiar to itself. Discussion of details must be left to specialists in each line of work.

It has been my fortune to be associated in a small way with the enforcement of the Federal meat inspection law. Therefore, while it seems undesirable in this paper to consider the details, I wish to speak of those things which are of fundamental importance in the control of the preparation and preservation of meat foods. The people of the United States consume annually about 15,000,000,000 pounds of meat and meat food products, including lard. Of this amount probably 60 per cent., or 9,000,000,000 pounds, is produced at slaughter and packing houses under Federal supervision, while the remaining 6,000,000,000 pounds are subject to such inspection as may be required by the states and municipalities.

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[1] Read at the 40th Annual Meeting of the American Academy of Medicine, San Francisco, June 26, 1915.

The meat inspection of the Federal Government, which is carried out by the United States Bureau of Animal Industry, has been spoken of, and I believe accurately, as the most thoro and exacting national inspection which is known among the countries of the world. I believe we may be sure, in so far as it is possible to be sure of things that depend upon the judgment of men for their correctness, that meats inspected and past by the United States Bureau of Animal Industry are thoroly fit for human food. The success of the Federal meat inspection has been brought about thru a strong and comprehensiv law, with adequate appropriations, and a strict merit system applied to the personnel.

In the case of meats which do not come under the jurisdiction of the Federal Government, the case is different. Each state and each municipality has a system of its own. The laws are frequently insufficient and the appropriations inadequate, so that the local inspection is too frequently either entirely lacking or else ineffectiv. It is highly important to the people of the country to secure a more effectiv inspection and control of the 6,000,000,000 pounds of meats which are produced in the country for local consumption.

Efficient control of the preparation and preservation of meat foods must rest upon three fundamentals as a basis. These are:

1. Broad and comprehensiv laws.
2. Adequate appropriations for enforcement of the laws.
3. Wise administration of the laws.

These three fundamental requirements are interdependent. The laws must come first, but they can be of no avail without money to enforce them, and both laws and money will prove unavailing unless administered by wise and fearless public officers.

1. Legislation.—Laws intended to control the preparation and preservation of meat foods could well be modeled after the Federal meat inspection law, which has been tried and found effectiv. They should require inspection of all food-producing animals both before and after slaughter, and the inspection should, besides, include all processes to which meats are subjected at slaughtering and packing establishments, and all compartments, rooms, and other places where meats are stored or handled. Power should be conferred upon the proper officials to condemn and destroy for food purposes, all carcasses, parts of carcasses and products which are found to be unfit for human food; to control the use of preservatives or other substances which might prove injurious to the consumer; to exclude from food-producing establishments persons affected with contagious or communicable diseases, and to regulate the handling and storage of foods up to the time of delivery to the consumer. All meats and meat-food products after being inspected and found fit for human food should be markt in such a way as to permit of their ready identification. Meat inspection laws should prohibit the sale of uninspected meats, and power should be given to the proper officials to withdraw inspection from establishments which violate any provisions of the law or of the regulations based thereon. Heavy penalties should be imposed upon violators of the law and upon all who attempt, by bribery or other improper means, to influence inspectors or others charged with the enforcement of the law.

2. *Appropriations.*—Powers such as those indicated above would be of no effect without appropriations for the employment of an adequate force of trained men. Unfortunately, it too often happens, particularly in the case of municipal meat inspection, that the funds provided are entirely insufficient, and that they are used to provide small jobs for political hangers-on, thus rendering proper inspection impossible. Proper meat inspection requires the services of trained men who devote their lives to this work. Such a force of men can be secured only by providing adequate salaries, and by adopting a strict merit system entirely removed from political or other outside influences.

3. *Administration.*—As I have already stated, and as every one will undoubtedly agree, adequate legislation and abundant appropriations will not in themselves be sufficient to insure proper meat inspection. A wise and firm administration is the third essential to success. At first thought it might seem to be a simple matter to enforce a meat inspection law, and I doubt whether anyone who has not been associated with such work

can conceive of the endless problems and the manifold difficulties that must be encountered under the most favorable circumstances. Officers charged with enforcing meat inspection laws have a double responsibility placed upon them: (1) The *prevention of the sale of unfit food*, and (2), of almost equal importance, *the conservation of wholesome food*. All unfit articles of food should be destroyed, but at the same time the greatest care must be taken to see that wholesome food is not needlessly condemned. In meat inspection, as in other similar lines of work, the inspector is confronted with some conditions which clearly require condemnation, but since processes of decomposition and diseases of animals are progressiv, there is constantly presented the problem of deciding when a product has actually become unfit for food. Such questions require the best thought of the best men. The easiest way out of such difficulties might be for the inspector to destroy all food concerning which any question arises. But while such a plan might simplify the problems of the officer, it would be both unreasonable and unjustifiable. There is probably no subject which has been of more concern to the people at large in recent years than the cost of food. To needlessly destroy wholesome food would necessarily increase the cost of food to the consumer.

It seems that any meat inspection service should be so organized and conducted that it will serve not merely to destroy unfit food and to punish violators of the law, but that it will be constructiv as well. Packers and others who handle foods should be taught the best methods, which are not necessarily the most expensiv methods, of preventing the decomposition and spoiling of meats and meat products. The great majority of producers will welcome suggestions of this character, which will result, first of all, in the conserving of much food which is now lost thru improper methods of handling; secondly, in the improvement in the quality of foods now produced, and last of all, in the saving of money to the producers themselves.

The subject of the preservation of foods has been given such wide attention thruout this country during the last few years that it has come to be considered frequently as a problem separate and distinct from food control along other lines. By some the question of food preservatives is placed first in importance among all questions relating to food inspection. In so far as meats are concerned, it is my opinion that this question, while undoubtedly of importance, is quite secondary to the more vital questions relating to the source and methods of handling foods at slaughtering and packing establishments. The ideal method for food preservation is undoubtedly cold storage, but it is not possible in all cases to apply this process. For example, hams and bacon when subjected to salting and smoking may be preserved in a wholesome condition for a longer time and more cheaply than would be possible if cold storage alone had to be depended upon. From time immemorial foods have been preserved by the use of certain chemicals, such as salt, sugar, saltpeter, vinegar, etc. It seems that it is necessary to use these substances in order to carry food over from the time of plenty to the days when it is scarce, and prolonged use has likewise seemed to show the harmlessness of these common preservatives. In considering the use of chemicals, which are new and untried, for the preservation of foods, we should always bear in mind that the processes of the human body are extremely intricate, and that our methods of studying these processes are as crude as the processes are intricate and obscure.

Administrativ officers should, therefore, approach with caution proposed innovations in the shape of chemical food preservatives, and should require the demonstration that when used in food such substances are harmless, and that their addition will benefit the public either thru the cheapening of the food or thru a more efficient preservation of it. It is clear that the question of the use of food preservatives is one which must be decided by a wise executiv. For however much information we may secure by scientific research, there are always left open questions which the scientist cannot answer with definiteness.

NOTE: The following named papers are recommended to those interested in the details of the Federal meat inspection and in problems relating to local meat inspection:

"The Federal Meat Inspection Service," by A. D. Melvin, D.V.S., Bureau of Animal Industry—Circular 125.

"State and Municipal Meat Inspection and Municipal Slaughterhouses," by A. D. Melvin, D.V.S., Bureau of Animal Industry—Circular 185.

THE ECONOMIC IMPORTANCE OF FEDERAL INSPECTION OF MEAT AND MEAT-PRODUCTS DESTINED FOR COMMERCE.[1]

By W. H. LIPMAN, M.D., Chicago.

The second half of the last century and the beginning of the present one have to their credit greater achievements in the field of medicine from the standpoint of resulting benefit to humanity, than any other period in the history of medicine.

The one outstanding feature that lends monumental pre-eminence to the accomplishments of the 19th century in the domain of the healing art, is the fact that most of the discoveries of that period were either of a direct prophylactic nature or were of a character that led to the development of prophylactic measures.

The medicine of the 19th century may well be called the medicine of prevention. The creed of prevention was conceived and was born in the 19th century and was adopted by the 20th century, which promises to develop it to such gigantic proportions as to transform the physician into a sanitarian and materia medica into a health guide-book.

Meat inspection, developt largely in the last half of the 19th century, is merely one form of prevention of disease. It belongs to the science of sanitation and its function is the production and selection of sound and healthful meat-food and to maintain it as such until it reaches the table.

Modern medicine has absolved food, especially meat-food, from the time-worn charge placed upon it in the dark days of medical guess work, that it can of itself produce disease.

Once having acquitted food of the charge of being an enemy of man, man began to make friends with it, and physiologists and preventologists, as well as clinicians, began to sing its praises, and we were told that good food and plenty of it is man's best protection against the development of disease, that the well nourisht body is impregnable to the onslaughts of disease germs.

But, said the champions of food as a prevention of disease, before we are ready to take our food we must be certain that it is sound and has not become contaminated either at its source or in the process of preparation. Therefore, all food, but especially meat-food, because of its importance in the dietary of civilized man, must be scientifically examined. Thus, meat inspection became a sanitary necessity.

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[1] Read at the 40th Annual Meeting of the American Academy of Medicine, San Francisco, June 26, 1915.

Being animal tissue, it follows that meat can be affected with the diseases common to the species from which it is derived, and altho very few of the diseases of food animals can be contracted by man thru eating of their meat, the importance of rejecting and excluding all meats affected to an extent that they are capable of conveying disease, is apparent.

The old world was quick to see the hygienic importance of meat inspection, and it was there that it was first elaborated and establisht in accordance with modern scientific principles. Our own country soon followed suit, and while in the beginning our inspection was limited, it was gradually broadened so that now it is equal, from the standpoint of scientific accuracy and thoroness, to that of any European country and superior to many of them.

At present, Federal meat inspection in this country is operating under the law past by Congress in 1906, empowering the Secretary of Agriculture to make ante-mortem inspection of all cattle, calves, swine, sheep and goats, and post-mortem examination of the carcasses and parts thereof, which are to enter interstate and foreign commerce. In addition, the law provides for the strict supervision of all processes of preparation of meat-food products, such as canning, curing, etc., and prohibits the use of all injurious preservatives. It further sets forth certain definite sanitary requirements for the entire physical equipment used in the slaughtering of food animals and the preparation of meat-foods. The law also controls the labeling and branding of meat-foods, so that every container must bear a label showing in clear definit language just what it contains, and every carcass and part must be branded or stampt to show that it has been inspected and past by the Department of Agriculture and the number of the establishment at which it was prepared.

The law extends still further and gives the Secretary of Agriculture the power of control over all meats while in interstate and foreign shipment, so that he may reject them whenever they are found unsound.

According to the law when a carcass or part, or any meat-food product, upon inspection at the time of slaughter or in the process of preparation, or in shipment, is found unfit for human food, it must be effectively destroyed by chemical and physical processes so that the products of destruction could in no way be used for human food.

Ante-mortem and post-mortem inspections are based on regulations issued by the Secretary of Agriculture under the law of 1906, which set forth the disposition of carcasses and parts, and accordingly, a carcass or part may be either:

(1) Past for food outright.
(2) Past for food after sterilization only.
(3) Condemned for destruction.

These regulations are in conformity with modern principles of pathology and etiology and embrace all possible conditions. Only those carcasses and parts thereof that in the light of modern science can be assumed to be free from all disease, contamination and products of decomposition, are past for food. In the process of inspection the entire carcass and all organs and glands are carefully examined, and all signs of abnormal conditions are lookt for and detected.

An idea of the thoroness of Federal inspection can be gained from the fact that during the nine-year period from 1906 to 1914, inclusiv, one and one-third million whole carcasses and five and one-half million parts of food animals were condemned, and in addition one hundred and seventy-nine million pounds of prepared meats were condemned on re-inspection.

A serious contemplation of these formidable figures must at once force three important conclusions:

First. That a system of inspection that causes the rejection of such an enormous quantity of food on sanitary grounds is unquestionably a tremendous factor in promoting public health;

Second. That the loss produced by such rejection is a serious economic problem;

Third. That energetic educational measures should be instituted among the producers in the country to eradicate the causes of rejections at their source.

No country is so rich that it can afford the wasting of a large part of its meat supply, and because of the constant shrinking of the number of food animals in this country in proportion to the growing population, it is evident that the problem of how to diminish the loss occasioned by Federal meat inspection is worthy of our best thought.

The loss may perhaps be better appreciated when it is reduced to dollars and cents.

For the fiscal year 1914, according to the annual report of the Chief of the Bureau of Animal Industry, 500,000 animals, including cattle, swine, calves, sheep and goats, were rejected by Federal inspectors, and in addition 19,000,000 pounds of prepared meats were condemned on reinspection. The loss produced by these rejections computed on the basis carefully workt out by the large packing houses, amounts to $8,000,000. The total weight of the rejections, figured on the basis of the average weight of drest animals plus the 19,000,000 pounds of prepared meats, reaches the enormous quantity of 132,000,000 pounds.

Assuming that the average per capita consumption of meat per annum in the United States is 165 pounds, enuf meat-food was rejected to supply 800,000 people for a year. To put it more tersely, the meats rejected would have kept the cities of San Francisco and Los Angeles in meat for a whole year.

It can be seen that such a loss is an economic menace. Somebody, somehow, pays for this loss. It would seem logical and just that the loss produced by condemnation of animals because of disease, should be borne by the owners in whose custody the animals acquired the disease, but such is not the case.

The owner who sells his live stock for slaughter in the great packing centers thruout the country is not made to pay back for the loss of that part of his stock that was condemned by Federal inspection, regardless of how big that loss may be. It does not seem like sound economics nor good business; nevertheless, that is the practice to-day.

Such a condition of affairs is not calculated to stimulate a desire in the breeder of stock to go to the trouble of taking steps to prevent the development of those conditions among his animals that cause their condemnation. Indeed, not many stock raisers know whether or not their stock was condemned after slaughter.

When the packer buys a number of animals for slaughter and several of them are condemned and are a loss to him, it follows that the remainder costs him what he originally paid for the entire lot, and as a natural consequence the meat of the animals that have been past costs more pound for pound.

It must be remembered that the Federal meat inspection law applies only to those meats that are intended for interstate and foreign commerce—it has no jurisdiction over meats of animals killed by butchers, farmers and others for local consumption, and because at present only 60 per cent. of the meat consumed in this country is under Federal inspection, the loss resulting from condemnations actually falls on only 60 per cent. of the people.

It is evident that the benefits derived from Federal inspection in that it acts as a safeguard to the health of the consumer by far exceed the loss produced thru condemnations, but it is equally as plain that if some means were available that would diminish or prevent the loss, without affecting the sanitary value of the inspection, a very material public gain would be accomplisht.

Since condemnations are always based on definit causes found in the animals inspected, it can be seen that the surest way to stop the condemnations is to prevent the development of those causes among animals. It is not to be expected that all the causes can be eradicated, even after the most painstaking preventiv work, but it is unquestionably true that some of them can be materially reduced and in time abolisht entirely.

A study of condemnations as reported annually by the Chief of the Bureau of Animal Industry, soon reveals the fact that while the causes of condemnations are many and include practically every conceivable condition that may be found in animals, the majority of the condemnations are produced regularly year by year by two causes, namely: tuberculosis and hog cholera.

For the fiscal year 1914 tuberculosis caused the condemnation of 30,000 cattle, while 28 other causes combined were responsible for the loss of only 18,000. In other words, tuberculosis causes one and two-thirds times as great a loss of cattle as all other causes put together. In the same year tuberculosis was responsible for the loss of 48,000 and cholera caused the condemnation of 116,000 hogs, while 32 other causes totaled the condemnation of 40,000. In other worlds, for the fiscal year 1914, tuberculosis produced the loss of 78,000 animals and hog cholera the loss of 116,000. These are very significant facts, because they point the way for attacking the problem.

These losses represent animals killed under Federal inspection only, that is, about 60 per cent. of the total animals slaughtered in this country. It is reasonable to assume that the animals killed without Federal inspection are affected at least to the same degree as those that are inspected by the Federal Government.

The condemnation of animals by Federal inspection on account of tuberculosis and cholera, represents only a small part of the loss produced by these diseases to the live stock of this country.

It has been estimated by authorities that 10 per cent. of the dairy cattle and one per cent. of the beef cattle of this country are tuberculous. The damage produced in these animals that remain on the farm by far exceeds the loss sustained by inspection. This damage operates in the following ways:

By diminishing milk production, which Dr. A. D. Melvin estimates at 10 per cent.;

By decreast fertility;

By failure to thrive and loss of weight;

By increast mortality;

By spreading the disease.

It has been definitely establisht that allowing hogs to feed on the excreta of cattle is the most fertile cause of the spread of tuberculosis among swine. Tuberculosis in hogs can thus be attributed to cattle.

In the report of the Bureau of Animal Industry for 1908, Dr. A. D. Melvin estimates the total loss to the farm animals of this country from tuberculosis at $23,000,000 per year. The disease, however, has been constantly on the increase since then and the loss has, of course, increast proportionately. The loss is made still greater by the fact that the value of live stock has increast, as, for example, the rise of the average value of milch cows from $35.00 in 1910 to $55.00 in 1915.

It is logical to assume that the present loss from tuberculosis in farm animals in this country is approximately $40,000,000 per year.

The Secretary of Agriculture estimates that cholera caused a loss in 1913 of 6,000,000 hogs, valued at more than $60,000,000.

Therefore, tuberculosis and cholera combined cause the loss of $100,000,000 in live stock in this country per year.

Fortunately, hog cholera is not communicable to man,—it is purely a disease of swine, and the danger of man acquiring tuberculosis thru meat, especially inspected meat, is so remote that authorities look upon it as negligible. The real and sole danger to the health of the people from bovine tuberculosis lies in the use of milk from tuberculous cows.

The indications then for combating these two animal diseases are based on sanitary and economic grounds. In the case of tuberculosis, both sanitary and economic, in cholera purely economic.

Recognizing the urgent necessity of stamping out hog cholera, the Federal Government appropriated $75,000 in 1913 for that purpose and in 1914 increast the appropriation to $500,000.

This work is naturally in the hands of the Department of Agriculture. We are all familiar with the work of the Department in the elaboration of the serum treatment of the disease, both prophylactic and curativ.

With the facilities at its disposal that this appropriation affords, the Department of Agriculture can be confidently expected to check the ravages of hog cholera. Already stations have been establisht in several of the heavily infested states, and a vigorous campaign is conducted with the activ co-operation of the state authorities. The work includes educational and sanitary measures and the use of serum.

The results so far reported have been decidedly encouraging. The mortality of the herds treated with serum was markedly lower compared with herds not so treated, and the prophylactic use of serum reduced the mortality in those animals who later developt the disease to negligible proportions.

A recent inquiry of the Rockefeller Institute for Medical Research by the writer brought the reply that the Institute is seriously considering the study in the newly organized Department of Animal Diseases of some one fase of the cholera question. The high standard of the work already accomplisht by the workers of the Institute in other fields, warrants the hope of important accomplishments from them. The very fact that the Institute considers the subject of sufficient moment to merit its attention, forcibly illustrates its importance.

There are certain features about hog cholera that exert a helpful influence on preventiv work.

In the majority of instances it is an acute, rapidly spreading affection, with a high mortality, the animals dying quickly on the farm, so that the owner's losses are high. Seeing that his herd is threatened with extermination, the owner is in a more or less receptiv mood for a campaign of prevention; he is ready to listen to reason and is open to conviction.

Anti-tuberculosis work, on the other hand, is beset with difficulties at the very inception. The insidiousness in onset and the chronicity of its course, make the cattle raiser anything but helpful in activ anti-tuberculosis work.

Nevertheless, powerful and numerous agencies have been and are actively engaged in the march against animal tuberculosis.

The Federal Department of Agriculture, state veterinary authorities, live stock sanitary boards, agricultural colleges, farmers' and breeders' organizations, and many other more or less thoroly organized bodies are waging a strong campaign.

In spite of all, however, tuberculosis of cattle and hogs is steadily increasing, according to the report of the Secretary of Agriculture for 1914. Among the 57,000,000 animals slaughtered under Federal inspection in that year, no less than 533,000 were found infected with tuberculosis. The fact that the disease is increasing does not necessarily mean that the preventiv measures already inaugurated are not accomplishing results; it means that more energetic and more comprehensiv measures are necessary.

It means that some reasons exist that make the present campaign against animal tuberculosis ineffectual.

The work undertaken against tuberculosis has usually been conducted in the following ways:

(1) Education of the cattle raiser in the economic and sanitary importance of the disease, in modes of its dissemination, preventiv work and the advantage of prevention.

(2) Discovery of the disease on farms by means of the tuberculin test and the disposition of infected animals either by slaughter or segregation.

(3) The raising of healthy herds.

(4) Sanitary measures designed to clean up infected premises on the farm and to prevent infection of cattle while in transportation at exhibits, fairs and like places.

To carry these measures thru, a great deal of legislation, Federal and state, is necessary. Laws are needed that will make their application possible.

Most states at present have laws requiring certificates of health to accompany all cattle entering the states for dairy and breeding purposes and in the absence of such certificates the cattle must be found free from tuberculosis by the tuberculin test before admission. While these laws are essentially alike, they differ radically in some details, and therefore cause a great deal of confusion and uncertainty.

The ultimate solution of this fase of the question seems to rest in the passing of a Federal law requiring the testing of all cattle with tuberculin that cross the state boundaries for purposes other than immediate slaughter.

Some way must be found that will make it possible to trace all cattle and hogs to their source of origin, so that when some of them are found infected at the time of slaughter, their owners can be notified and necessary precautionary measures installed. In many instances, Federal inspection at the time of slaughter enables the Government to trace infected localities in various parts of the country, but in the absence of a comprehensiv system of identification, the advantage gained by means of inspection cannot be followed up.

If the animals slaughtered at present by butchers and small dealers for local consumption without inspection, would receive either Federal, state or municipal inspection, another effectiv means of finding out infected districts would be available, because these animals usually come from near-by places, so that it would be an easy matter to trace their origin.

For that reason, and for the reason of the necessity of the protection of the consumer of these at present uninspected meats, the passing of laws putting them under some sort of inspection must be urged.

The benefits derived from the laws existing in various cities making it obligatory on the part of physicians to report to the health authorities all cases of tuberculosis in human beings are well known. These laws have proven to be most efficient steps in inaugurating prevention. The same results could be accomplisht if laws were past compelling veterinarians and others having knowledge of the existence of tuberculosis in domestic animals to report to state veterinary authorities.

In order to bring the entire question of animal tuberculosis under the control of the Federal and state governments, additional laws will undoubtedly have to be enacted, as for example, some form of indemnification of the owners for the loss of animals destroyed in the course of preventiv work. It is not to be expected that all necessary legislation can be forthcoming within a short time. The urgency of the problem, however, and the fact that the existing laws are inadequate, as shown by the constant increase of tuberculosis, make it plain that a beginning must soon be made.

It is a common experience that the best and surest way to secure needed legislation, is to create an insistent public demand for it. Once the law makers are convinced that the public demands a given measure, its passage will soon be forthcoming.

Because animal tuberculosis so closely touches the question of human tuberculosis, the education of the public in the entire problem and the creation thereby of a demand for the needed measures of relief would properly seem to be not only the function, but the obligation, of the medical profession.

Primarily, animal tuberculosis is, of course, a health question, and, secondarily, it is a problem in food economics. In its ultimate analysis, the food question, even economically considered, is in reality a health question, because as food is made more available health becomes more possible and as food is wasted health is dissipated.

The physician of to-day and to-morrow cannot remain merely a healer,—he must become a teacher and preacher of health preservation.

The task of preserving the nation's health by preventing the needless wasting of a great part of its food is part of the business of the physician.

To stop the loss of the people's meat is an undertaking worthy of the best efforts of 20th century medicine.

Sociologic medicine must help and encourage the forces charged with the eradication of animal diseases that are responsible for the condemnation of meats. These forces know the ways and means necessary to stop bovine tuberculosis and hog cholera,—we must make these means available.

We must convince the nation of the need and possibility of wiping out these scourges and the nation will soon demand that it is done.

Our best efforts must be utilized to bring to the knowledge of everyone that Federal meat inspection safeguards the health of the people.

We must insist on the need of establishing inspection, state, municipal or Federal, of those animals at present slaughtered and sold without inspection.

We must make plain that milk is a serious source of transmitting bovine tuberculosis to man, so that municipal and state authorities will demand milk from cows free from tuberculosis.

The breeder must be made to see that it is wrong for him to permit his cattle to acquire diseases that will cause their condemnation and a consequent economic loss.

When we have accomplisht all that, we will have done a great deal to make this a healthier and wealthier land.

THE ECONOMIC IMPORTANCE OF THE FEDERAL INSPECTION OF MEATS AND MEAT-FOOD PRODUCTS DESTINED FOR COMMERCE.[1]

By GEORGE DITEWIG, D.V.S., Bureau of Animal Industry, United States Department of Agriculture, Washington, D. C

The Federal inspection of meats and meat-food products is of economic importance in three particular respects. First, it is the instrument by which an important part of the export commerce of the United States has been secured and preserved; second, it is a service in hygiene and sanitation of incalculable benefit to the country at large and, efficiency considered, is rendered at an extremely low cost; and third, it actually and potentially is the most thoroly equipt agency thru which may be gathered the data necessary to the success of any broad program having for its object the conservation of the nation's meat-food supply thru the eradication of damaging and destructiv diseases from the food animal herds of the country. It has other elements of lesser economic importance which need not be enumerated, but before proceeding with a presentation of the facts upon which the foregoing is based, a brief statement regarding the Federal meat inspection service as a whole will conduce to a better understanding of its economic values and possibilities.

Federal meat inspection is conducted under the provisions of the Act of Congress of June 30, 1906, commonly designated the "Meat Inspection Act," the purpose of which is to prevent the use in interstate or foreign commerce of meat and meat-food products which are unfit for human food. In brief, this law authorizes the Secretary of Agriculture, at his discretion, to make, thru inspectors, an ante-mortem examination and inspection of all cattle, sheep, swine and goats to be slaughtered, and the meat and meat-food products of which are to be used in interstate or foreign commerce, and it directs the Secretary to make, thru inspectors, a post-mortem examination and inspection of the carcasses and parts thereof, and an examination and inspection of all meat-food products, of all such animals prepared for human consumption at any slaughtering, meat canning, salting, packing, rendering, or similar establishment for transportation as articles of interstate or foreign commerce. If, on such post-mortem inspection, the articles are found to be wholesome, within the meaning of the law, it is the duty of department inspectors to mark them "Inspected and Past," and, if not, to mark them "Inspected and Condemned." Condemned articles are required to be destroyed for food purposes in the presence of an inspector. Inspection of meat and meat-food products derived from the animals mentioned, prior to entering into interstate or foreign commerce, is mandatory, except in the case of retail butchers and retail dealers supplying their customers and of animals slaughtered by a farmer on the farm. The law prohibits meat or meat-food products being sold or offered for sale in interstate or foreign commerce under any false or deceptiv name, and it provides that the Secretary shall prescribe the rules and regulations of sanitation under which inspected establishments shall be maintained, and that he shall make, from time to time, such rules and regulations as are necessary for the efficient execution of the provisions of the statute.

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[1] Read at the 40th Annual Meeting of the American Academy of Medicine, San Francisco, June 26, 1915.

The meat inspection regulations based on the Act require that the proprietor or operator of every slaughter or food-preparing establishment to which the law applies shall make application to the Secretary of Agriculture for inspection. Retail dealers who are granted a qualified exemption under the terms of the law must make application for such exemption. When an application for inspection is received by the Department, the establishment to which it refers is examined by an inspector of the Bureau of Animal Industry under which the service is administered and the applicant is advised as to the requirements of the regulations relativ to the facilities to be furnisht by the establishment for the conduct of the inspection; also as to the corrections and improvements to be made, if any be needed, for placing the plant in a sanitary and otherwise satisfactory condition. When the inspection facilities have been provided, and the defects as to the sanitary conditions corrected, an official number is assigned by which the establishment is designated and its products identified. Inspectors are stationed at the establishment to conduct the inspection.

With reference to the opening statement that the Federal inspection of meats is a service in hygiene and sanitation of incalculable benefit to the country at large, and that this service is performed at an extremely low cost, the following facts and figures are cited:

In the fiscal year ended June 30, 1914, inspection was maintained at a total of 893 establishments in 244 cities and towns in the United States. The total of animals inspected at the time of slaughter was, in round numbers, 56,909,000, divided as follows: cattle, 6,724,000; calves, 1,814,000; swine, 33,289,000; sheep, 14,958,000; goats, 121,000. The number past on the slaughter inspection was 56,473,000. The number of carcasses past under special restrictions, that is, for rendering into lard or tallow under a sterilizing process, was 154,900. The number of whole carcasses entirely condemned on this inspection and which were destroyed to prevent their use for human food was 281,300. The number of carcasses retained on the post-mortem inspection for the removal and condemnation of a part affected with some disease or condition which rendered the part unhealthful or otherwise unfit for food without affecting the remainder of the animal was approximately 3,000,000. In addition to the carcasses condemned on the slaughter inspection, there were condemned for various causes, on the ante-mortem inspection, including those found dead or in a dying condition, 66,700 animals.

The reports covering inspections and reinspections of meats and products prepared and procest in the establishments aggregated several billion pounds, while the quantity of meats and products condemned on such reinspections on account of having become tainted, rancid or otherwise unwholesome amounted to several million pounds.

Under the tariff act of October 3, 1913, meats and meat-food products are admitted into the United States free of duty, subject, however, to the inspection requirements prescribed by the

Secretary of Agriculture. The regulations governing the inspection of imported meats are similar to those prescribed under the Meat Inspection Act for domestic meats and products. The imported meats and products inspected from October 4, 1913, to June 30, 1914, the first nine months of the operation of the new tariff law, were 197,389,348 pounds.

The force employed in the entire service numbers about 2400 employees, appointed under the United States Civil Service requirements. There are approximately 760 veterinarians, graduates of accredited colleges, and 1500 "lay inspectors" who are trained laymen, the remaining number being made up of administrativ officials, specialists, laboratory inspectors, and clerical forces.

The sum appropriated by Congress for meat inspection for the fiscal year 1914 was $3,200,000, within which sum the service was maintained. In other words, the cost to the people of the United States was less than six cents for each of the 56,909,000 animals slaughtered. This charge of less than six cents per animal covered the entire inspection from the first inspection of the live animal to the final examination of the meats and the finish products when ready for delivery to dealers or consumers. This low cost is not attained at the expense of efficiency in the service. In fact, the reverse is the case, in that it is the constant endeavor to improve and strengthen the service. The advantages residing on the side of the Federal inspection in respect to cost of operation are: wide-spread and effectiv organization, training and specialization in duties, and heavy volume of operations upon which to compute unit cost. It would be quite impossible for any state or municipality in the United States to maintain for itself a system of inspection of the same completeness and efficiency except at a ratio of expense very much in excess of that of the Federal inspection. Inasmuch as upwards of 60 per cent. of the cattle, sheep, swine and goats slaughtered for food in the United States are inspected under Federal inspection the economic benefit accruing to the community at large thru the Federal service is apparent.

With reference to the declaration that the Federal inspection of meats and meat-food products secured and has preserved an important part of the export commerce of the United States, it may be stated that commercial and economic necessity was the chief consideration leading to the earliest enactments by Congress providing for meat inspection. (Acts of August 30, 1890, and March 3, 1891.) Entrance to foreign markets was necessary for the disposal of the great surplus of food animals and meats produced in the United States. Prohibitions and restrictions had been raised to such an extent by different foreign governments against the importation of American meats that inspection and certification by our Government to overcome them became necessary. Accordingly, the laws referred to were enacted by Congress, inspection was establisht and certification provided as to the soundness of the animals and of the wholesomeness of the meats past under such inspection. The result was expansion in the export trade in meats and food animals with corresponding benefit to the agricultural interests of the United States. These laws did not contemplate an inspection so broad and effectiv as the one provided for by the Act of June 30, 1906; nevertheless, there was built up a system of competent inspection for all the meats exported to countries requiring certification by this Government, and a like inspection for a high per cent. of the fresh meats shipt interstate in the United States. Moreover, when the present law was enacted the organization which had been formed was qualified to take up the work of carrying its broad and more stringent provisions into effect.

The need of the Federal inspection of meats and meat-food products destined for export is necessary to-day as in the past, notwithstanding that the United States has become a meat-importing country. The decline in domestic production which has led to these importations has been very markt as regards fresh beef and mutton, but there continues to be a considerable surplus in certain lines of pork meats, lard, oleo oil, edible tallow and lard substitutes for which foreign markets must be had. The requirements of foreign governments relativ to the certification of meats admitted by them have increast rather than diminisht, and an inspection that will meet them remains an economic necessity. The number of pounds of all forms of meat and meat-food products derived from cattle, sheep, swine and goats exported under Federal certificates of inspection has been substantially as follows, the years cited being the Federal fiscal years, and the amounts stated in round numbers: In the five-year period from 1898 to 1902, inclusiv, the lowest annual exportation was 640,000,000 pounds, and the highest 766,000,000 pounds. In the five-year period from 1903 to 1907, inclusiv, the lowest annual exportation was 531,000,000 pounds, and the highest 1,360,000,000 pounds. The explanation of the great increase indicated in the last-named total is that, beginning with 1907, the certifications were made to include certain meat-food products, for which, prior thereto, certification had not been required. In the five-year period from 1908 to 1912, inclusiv, the lowest annual exportation was 815,000,000 pounds, and the highest was 1,545,000,000. For the fiscal year 1913, the exports were 977,000,000 pounds, and in 1914 they were 904,000,000. For the first eight months of the current fiscal year, July 1, 1914, to February 28, 1915, the exports total 775,000,000 pounds.

That the Federal meat inspection service is the most effectiv existing agency for collecting, on a broad scale, data absolutely necessary to the success of any extensiv program for the eradication of certain diseases from the food herds of the country can be readily shown. More particularly such diseases as tuberculosis and certain serious parasitic affections, the presence of which is not suspected in the living animal until the damage they do is beyond remedy and the losses they cause are beyond prevention. The eradication or a material reduction in these diseases will lessen enormously losses on the farm, and in a corresponding measure remove the cause of the losses from condemnations under inspection. Every success in this direction is a material advance in the conservation of the nation's possible meat-food supply. No country should deem itself so rich that it may be indifferent to losses of this character. Measures for their reduction or elimination should be employed and at least two ways in which meat inspection is concerned are open for efforts in this direction. The first is to see that the rules governing condemnation on inspection are based on sound principles and that they are intelligently applied so that unwarranted condemnations shall not occur. The second is that means be devised and effected for the eradication from affected herds on the farms of diseases which, by their presence, make meats dangerous or otherwise unfit for human food. These proposals will be discust in their order.

The first proposal has been substantially met under Federal inspection in that the rules of condemnation on account of disease have been prepared by scientific and practical experts and, moreover, essentially conform to the views exprest by a commission of seven men outside of the Department convened in 1907 by the Secretary of Agriculture to study the subject and express opinions upon the disposition of carcasses affected with various diseases and abnormal conditions. This commission was composed of eminent pathologists and hygienists headed by Prof. William H. Welch, of Johns Hopkins University, as Chairman. That the regulations are intelligently applied is indicated by the fact that all condemnations on the post-mortem inspection under the Federal system are determined by graduated veterinarians and then only by such veterinarians after they have received instruction in the practical application of the rules after admission into the service. Therefore, important reductions in the losses under inspection on account of diseases or other conditions that make meat dangerous or otherwise unfit for food cannot be made without impairing the safeguards which it is the function of meat inspection to establish and maintain. The procurement of reductions in this way cannot be given favorable consideration. Therefore, recourse to the second proposal must be had.

The economic importance of the Federal meat inspection in relation to the eradication of disease from food herds lies in the fact that territorial areas and localities in which the obscure diseases referred to prevail to a damaging extent must first be known before any extensiv plan of eradication can be carried into effect. This information the Federal meat inspection system is best equipt to supply. Its inspectors, stationed in many states, make actual post-mortem examinations of upwards of 60 per cent. of the cattle, sheep, swine and goats slaughtered for food in the United States, and in every case where disease is found the diagnosis and the character and the extent of the lesions are made a matter of record. This information, used in conjunction with livestock shipping records is sufficient in most cases to fix the territory of origin, and in many cases is sufficiently complete to lead to an identification of the farms and herds that supply diseased animals for slaughter. With the perfection of shipping records and other means of identification, inspection data could be supplied even more rapidly than it could be used under any probable scheme of eradication. The value of information thus collected has been proved in important instances where it has been used for disease-eradicating purposes. However, the Federal Government is without sufficient authority to enter the states without their consent to inaugurate independently so important and beneficial a project. Therefore, an adequate exercise of their police powers by the several states in which the diseased herds are found will be essential to success. It is not too much to hope that the time is not distant when an enlightened public knowledge and appreciation of the importance of such a program of disease eradication will lead the states to grant their officials the power and support necessary to its success. When that time arrives, the Federal meat inspection service will be found ready to provide in great volume the essential data, and in other ways contribute to the success of the undertaking.

That the Federal inspection of meats and meat-food products destined for commerce possesses great economic importance the facts submitted show, but of far greater value and of higher importance than this is its service in the field of hygiene, sanitation, and protection of the health of the people.

DISCUSSION.

DISCUSSION OF PAPERS OF DRS. PENNINGTON AND CLARK, WEBSTER, STUBENRAUCH, DORSET, AND DITEWIG.

Dr. M. E. Jaffa, Berkeley, Cal.:

I think there is no doubt but what there should be control of all food products intended for commerce. At the same time, if our laws were as they should be, that question would take care of itself. We should have uniform laws, not only between the states, but between the states and the national government. If the laws were uniform with reference to the control of the preservation and preparation of foods, we would not have to think or consider the question of control of food for commerce, because each state would have similar laws and it would be taken care of.

A large number of instances could be given showing the necessity of control. I will give only one or two. Take the case of vegetables. We all agree that vegetables should form part of the diet. In many places it is impossible to get fresh vegetables. There we should have them dried and such drying should be controlled. For instance, in the case of the potato, which has great hygienic value, notwithstanding some opinions to the contrary. The potato can be dried without preservatives and remain in a first-class edible condition. But someone wisht to put on the market a nice white product, and they bleacht it with sulphur. The result is that such a potato will show a high content of sulphuric acid which is poison. If proper laws controlled, that would be prevented.

The same is true in reference to fruits. In the drying of some, where it is almost essential, the sulphur process should be used to a limited extent. Here again, control is necessary. With some fruits there is no necessity for it whatever; for instance, grapes. In seedless grapes we find the amount of sulphurous acid is below the limit allowed by certain countries and even below the limit indicated by Food Inspection Decision No. 76. At the same time there is a large amount of sulphuric acid. Oxidation does not take place so rapidly in the apricot, peach, pear, or apple. Furthermore, fully 90 per cent. of the pitted fruits are soakt and washt before consumption and thus a very generous amount of the sulphurous acid is removed and this loss is still further augmented by cooking. Not so with sulphured grapes. These are rarely washt or soakt before cooking. They are either eaten raw or in cake, bread, etc. In either case there is ingested with the raisin the injurious acid compounds. Similarly as regards the desiccated bleacht potato.

Another example of the necessity of controlling the preparation of fruits is the case of the olive. People do not realize the dietary value of the olive. It is considered as a relish, but it is not so. A pound of ripe olives contains $^{11}/_{12}$ the caloric value of a pound of bread. Unfortunately, there is a product labeled as ripe olives which is not true to name. It is a green olive, pickled to represent a ripe olive, and instead of from 20 to 25 per cent. of oil, it has sometimes less than 13 per cent. Again, unfortunately, there is a tendency on the part of some to increase the size by over irrigation, and thereby decrease the food value. That, again, should be controlled. The whole subject of putting the ripe olive on the market should be supervised. It may be said that the University intends, this Fall, to undertake an investigation of conditions along this line with a view to betterment.

Transportation: The ripe olive, when it is improperly pickled, will not bear transportation and arrive at its destination in first-class condition. That is due, again, to the fact that the olives, when they are pickled, are not carefully sorted and selected so that soft ones will not be included. The process of pickling and preserving should be controlled.

Refrigeration: There is a great prejudice against refrigeration. The refrigeration of to-day and that of twenty years ago are as different as night and day. If it were not for this method of preserving food the consumer would have to pay a large amount for food products which they get now for lower prices. If eggs are placed in refrigeration *fresh*, they will come out in first-class edible condition. The consumer can preserv eggs in his own home, so that they will be in first-class edible condition. He may buy them when they are low in price, and preserv them by means of water-glass, so that when they cost fifty or sixty cents, he can get that nourishment at a much lower cost. The question again is to remember that they must be preserved in a fresh state. After they are three or four days old, degeneration commences and we cannot preserv them.

Many more points I would like to discuss, but the time is up and I do not want to hear the hammer.

(After request to continue.)

I wish to add to my remarks in connection with the preservation of different foods and also their nutritiv value, as illustrating the general principle that the total nutritiv value should not be considered only from the standpoint of the chemical analyses of the materials as purchased. If rice and olives, for example, are compared, it will be said immediately that a pound of olives has not the food value of a pound of rice. This is true in the raw state, but rice cannot be eaten raw. It must be cookt. It then contains at least 50 per cent. of water. Comparing a pound of cookt rice with a pound of ripe olives, the olives will show a far higher nutritiv value.

Let us consider the matter of meat and cheese. Cheese is very concentrated, containing about 25 per cent. of water, upwards of 30 per cent. of fat, and 25 per cent. of protein. One could hardly eat half a pound of cheese at a meal, whereas the case is entirely different with meat. This point is often lost sight of when tables of food values are compiled.

I wish to emphasize again the fact that refrigeration is a blessing to the consumer if the practice is properly carried out and if the food control laws are properly enforced. Cold storage operations to-day, as before stated, are entirely different from those of years gone by. In the case of eggs, entire buildings are used solely for the storage of this article of food, no other food materials being allowed in the same building.

It is true that there has been in the past, and there is still to-day, a prejudice in the minds of many against the cold storage egg. This prejudice, however, we feel confident will soon be removed, provided the food control laws with reference to cold storage are strictly enforced. In the past it was unfortunately a common practice for certain dealers to take one case of first-class cold storage eggs and two cases of fresh eggs, and in a very few minutes have three cases of "fresh laid eggs." The cold storage eggs which could not "pass muster" were sold under the label "cold storage eggs." These eggs should never have been sold at all. They should have been destroyed or not used for human consumption. If such a practice had been adhered to and only first-class cold storage eggs sold as such, there would have been no prejudice to-day existing with reference to the cold storage egg. It would be a somewhat difficult matter for a chemist to prove to a judge and jury the difference in food value between a first-class cold storage egg and an ordinary fresh egg.

In our laboratory we have workt out certain methods by which we have been able to prove to a judge and jury whether or not an egg is fresh in the common usage of the word, and we can readily tell, provided we know the temperature at which the egg has been kept, how old the egg is. Again, we can say such and such an egg is of a certain age had it been kept at say 60° F. If, on the other hand, the egg had been kept at 70° F., then the age would be different, etc., etc. We have conducted many successful legal prosecutions by the use of our laboratory methods, such prosecutions having been the means of bringing about an appreciable reform in the sale of eggs.

Dr. Woods Hutchinson, New York:

We have enjoyed very much the exceedingly interesting, pointed, practical remarks made by Dr. Jaffa. He has rendered a great service in calling attention to the popular prejudice which exists in regard to the use of preservatives. The most important preservativ is good common sense, and I hope we are going to have a little relief from the brass-band hysteria that has been sweeping over the country in the condemnation of all sorts of preservatives, most of which have been found absolutely harmless. The crusade against benzoate of soda comes under that absolutely. The best comment was made by Abe Martin. He said, "Grandma didn't know nothin' about benzoin of soda. She hid her jellies to make 'em keep." The question of preservatives should be lookt at from an intelligent, broad, common-sense point of view, and not from some special wild campaign carried on by so-called food chemists.

Dr. Emma B. Culbertson, Boston:

Just one point in connection with the paper on the preservation of fish; in justice to Boston, I would like to say that the whole question of the preserving and preparation of food products was brought out vigorously a few years ago in connection with poultry. The poultry had not been drawn before placing in cold storage! Experiments proved that the chickens which had been carefully cleaned and then placed in cold storage deteriorated much faster than the intact fowl. So there was method in the madness of the Boston market.

Dr. E. D. Clark, Washington, D. C.:

The question of drawn and undrawn poultry is outside of my line, because I am especially charged with the study of fish and fish products. But I have been in the laboratories where a great deal of the scientific work is done, and I believe it is true that it is better from many points of view to not draw the poultry. Of course, a moment's thought will show you why this is. As soon as you open the body cavity of the bird, it means two things will happen. The blood will be smeared all over the inside of the body cavity, and also a certain amount of the intestinal content. That makes ideal bacterial culture ground. The washing is never complete, because you cannot get any man to wash thousands of poultry as thoroly as is necessary. Some have thought that wiping dry would remove this contamination. That is also difficult to carry out for the same reason. As Dr. Jaffa said, in all things we must be guided by common sense. I believe there is a great deal of reason for thinking poultry should be shipt and handled in the undrawn state. If conditions could be absolutely controlled and were ideal where the poultry was drawn and handled, drawing probably would be the better way, as in a person's own home, but in a large scale production it would be a difficult thing.

In regard to the question of refrigeration and the better handling of food products, it has pleased me very much to hear the gentleman interested in the transportation of fruit say that refrigeration is the keystone in that business, and also that the same is true in the milk business. It is also true in practically every business there is that involves the handling and transportation of perishable foods. If there could be some way, thru government agencies, or thru the agency of physicians among their own patients, that some of this prejudice against cold storage could be removed, it would be a very good thing. It would be much fairer, in the first place, to the people. There is one point involved that most people overlook. It is simply the question of economics. It costs perfectly good money to store products and hold them in storage. You have the charge for the storage and refrigeration; you have the charge of handling and putting the products in; you have the charge of the container, which is a large item; and you have insurance on the product. Every day your charges are heaping up. The lesson is, that the man who has any product in cold storage is going to take it out at the first time the market warrants him in doing so and making a profit. There would be no temptation whatsoever for a man to keep any product over from one fresh season to another fresh season. If we are dealing with mackerel, for instance, there is no reason for holding them more than from one July to the next July. As a matter of fact, if you go to the large storage plants in New York or other eastern cities, you will see that the mackerel is used up pretty well by the end of six to eight or nine months. There is a great deal of legislation that is rather unfair. This legislation seems to have been accomplisht by people who are extreme in their views on cold storage.

They go on the assumption that cold storage is the means of monopolizing and cornering the market. There is no supply of any cold storage product that can be monopolized, for very obvious reasons. The expense is too great for anyone to do that unless there is a certainty of unloading at a time when that particular commodity is not to be had. Whether it is the fruit industry, the milk industry, or the egg industry, the thing you must do is to see that your product is handled in a proper and sanitary way, that it is first class when it goes into cold storage, that it is treated in a proper way while there, and that it is labeled for what it is and sold for what it is. Unfortunately, no grocer, if he can help it, ever willingly sells cold storage goods. There is a sign up in some cases, "Cold storage goods handled here," but that does not tell how many. He takes a case out of cold storage plant, and will sell you different grades of eggs from it all the way from 60 to 23 cents, in accordance with what you like to buy. The chances are many that they are exactly the same eggs. But people will not buy cold storage eggs as such, and therefore he merely changes the label, and says "Fancy ranch eggs." That is extremely unfair to the people, because, as all of the speakers here have brought out, it is necessary for the conservation of perishable food.

Dr. H. H. Hicks, San Francisco:

I have nothing to add, except possibly to emphasize the fact that about 60 per cent. of the meat and meat-food products of the United States are killed and prepared under Federal supervision, and we feel that we can assure you that wherever you go, when you see the mark "U. S. inspected and past," on a piece of beef or on a case of meat-food products, you can eat such product with a clear conscience, and you can advise your patients and friends and everybody that it would be well to look for that mark. In cases where they cannot get it, they should do the next best thing and look for inspection marks of municipalities, counties, or perhaps states, where they maintain inspection which, in almost every case, is based upon Federal inspection, and in many places very nearly approaches it in value and efficiency. The public ought to be educated to look for the inspection mark on meats and meat-food products.

THE PHYSICAL BASIS FOR IRRITABILITY IN BOYS—THE BEGINNING OF JUVENILE DELINQUENCY[1]

By JOHN ADAMS COLLIVER, A.B., M.D., Medical Probation Officer Juvenile Court, 1904-1914, Los Angeles, California.

This evening I am going to tell you some stories and try to give you some juvenile court clinic. Those who have come here expecting the usual learned scientific paper quoting long lists of authorities, etc., are going to be more or less disappointed. This is a home product workt up from home material, all taken from our Juvenile Court, over which presides your former fellow-townsman, the Hon. Curtis D. Wilbur.

Before taking up this clinic, however, it will be necessary to review a few underlying principles. I will endeavor to give you some facts and a little theory, altho, as a matter of fact the theory was the last workt out.

It has been the constant endeavor of the Court to discover the cause of crime. I believe there is always a reason for a boy going bad, but the reason is not always within the boy. Of course, the greatest influence in the production of delinquency in boys is a factor over which we have little or no control—the parents; but aside from, and, in addition to, the parents, I believe there is a physical basis for the beginning and often the continuance of crime in the boy. It is not an easy matter to determine this cause, but the work is only in its infancy and if we find there is a physical basis in a very small per cent. and profit by it we are more than paid for our endeavor. This means, as you see, that badness in boys is more or less excusable as far as a boy himself is concerned—in one case fault of the parents, in the other the boy's defect.

A careful analysis of the early history of a few thousand juvenile delinquents shows that a large majority begin their career of being irritable at home. This per cent. would probably be much higher if more reliable early data could be obtained. This is the cause of the first step a boy takes toward becoming a criminal. We all know that all irritable boys do not become disrespectful, and once disrespectful and disobedient do not become incorrigible; nor those becoming incorrigible go on to criminals, nor do all criminals get into court. But it does mean that they are on their way, and if the cause be not found and corrected, will arrive there. The converse is true, however, namely scarcely a juvenile delinquent or an adult criminal but that has past that way.

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[1] Address, illustrated with stereopticon, before the Riverside County Medical Society, City School Board, Teachers and Probation Officers, Riverside, Cal., April, 1911. This paper has been publisht in the Manual of the Juvenile Court of Los Angeles, 1912.

Now, what is the cause of this irritability, which is the first step in changing the character of the boy? The nervous mechanism is the same in all cases, altho originating from different sources. In other words, different causes produce the same phenomena or irritability in the same way. Before taking up these different causes, therefore, let us first understand the main phenomena.

The nervous system consists of the brain, spinal cord and two sets of nerves, one for carrying impulses in, called sensory nerves, and another for transmitting impulses out to muscles, called motor nerves. Any stimulation or irritation of sensory nerves goes to a center in the cord, or brain, and causes stimulation in a motor nerve which passes out and tends to make the muscles contract, and there is motion. It is further true that all irritation of sensory nerves tends to travel this arc. This is what is commonly called reflex action, while all of the most complicated movements we daily perform without thinking about them are other examples. In other words, all of our habits are of this variety. The only difference lies in the fact that impulses for habits arise within the brain and are voluntary. Any new movement at first is difficult and slow, but the more we make it, the easier and more rapid it can be done, until soon it is done unconsciously and it becomes part of our daily life. This is just as true for good as for bad habits; either becomes fixt.

On top of all this we find that the natural tendency of a boy is not to be good; and this is especially noticeable at puberty. At this age, from a biologic point of view, he is mature. This tendency to go bad is especially noticeable in boys at this age by their school reports, showing poorest deportment of all their school days. We see it also in frequent fights, truancies, incorrigibilities, etc. Again we see the same tendency illustrated in children's natural play, where they tend to revert, as shown in such plays as "chasing," "hide and seek," "big Indian," "killing games," etc. Thus it is not natural for a boy to be good any more than it is consistent to raise a weedless crop without cultivation, or domestic animals without training. His tendency is to go in the line of least resistance. If he is good, it is a reflection of his environment and speaks well as a rule for his parents.

There is no clear-cut line between good and bad habits. This line of demarcation is subject to constant change in the effort to adapt himself to social environment. What was common property, at one time, to-day is trespass. Things that you could do and enjoy when a child, would to-day land you in the court. According to the last report from the clerk of the Probation Court of New York, over fifty per cent. of cases of the children taken into court in New York City are due to the child's normal instinct to play. So we see the standard of right and wrong is constantly changing, but the physiologic make-up of the boy remains the same.

With the boy's natural tendency to go bad, the good boy must be trained. His habits, therefore, are artificial and consequently more difficult and uncertain. With all this, we have the unstable nervous system of puberty struggling to adapt itself to the rapid physical growth. We have the age of undevelopt inhibition; the age of greatest desire for possessions; and we have over 92 per cent. of boys from broken homes, meaning practically no training. How can we blame the boy for going wrong?

Stimuli from the outside are stronger than those arising from within, as the will and tendency for action is proportional to intensity of stimulus. In other words, a stimulus may arise from without, as from some physical defect, and be so strong as to block the weaker impulses arising from within, as the will, and the lines over which the more difficult and unnatural acquired habits travel are blockt. The boy reverts and does the most natural thing—he shows the savage. He becomes irritable and says and does things he would not otherwise. If the irritability continues, he becomes more ugly, disrespectful, incorrigible and disobedient, first at home, next at school, and finally to the law, and winds up in court.

It is concerning these many different stimuli, which arise from outside of the brain, that I will introduce the clinic.

The simplest, uncomplicated form of irritability is first noticed in the infant, who ceases to play, cries easier, and finally gets spunky and mad, as the time approaches and runs over for its feeding. Later in life the same form of irritability is exhibited in the child. In each case they are changed to smiling, cheerful and playful beings by the satisfaction of hunger, and allaying the irritation of the terminal nerves of the stomach. As we pass higher up it is a common observation to notice the irritability in adults coincident with hunger, indigestion, sleeplessness, corns and even a saw collar.

Now let us take up the clinic as they come, starting with the external irritants, then taking the internal, and finally those which are obscure or toxic.

TEETH.

In the classification of about 1000 cases, I find about 60 per cent. of the boys have defectiv teeth. By defectiv teeth I mean irregular, not opposing, notcht and decayed or aching. No account is taken of uncleanliness, etc. In other words, only those are classified defectiv which may be producing directly or indirectly some irritation. The per cent. of defectiv teeth among school children at the same age is ten to fifteen per cent. less than the juvenile delinquents in court. This difference is worthy of consideration as one of the factors contributing to juvenile delinquency. Let us consider its bearing on the psychic activities and character of the child. We have had numerous boys in court who have complained of toothache, which no doubt contributed to their delinquency.

Another form of irritation of direct nature, but more obscure, is found in the conditions of impacted teeth. Here we do not have the direct local acute irritation, but a low-grade irritation which produces a nervous tension. This tension is similar to instinct which, when the weather gets cold, causes fowls to fly South to a warmer climate. It is illustrated in boys by a spirit of unrest, disobedience, truancy, incorrigibility, etc.

Indirectly, defectiv teeth contribute to irritation thru the digestiv apparatus. First, a direct irritation thru the intestinal tract. Second, by poor nutrition. Direct irritation in the intestinal tract will, in the same way as direct stimulus from impact teeth or toothache itself, tend to block effort to do right. The result is, the boy passes thru the same stage of irritability, disobedience, incorrigibility and untruthfulness.

Two cases almost indentical illustrate this point. One boy 15 and the other 16 years old were brought into court for stealing. One had no molars on either side above or below and the other had no lower molars. Both gave a history of chronic intestinal indigestion. They each began their career by being cross and irritable at home; later "playing hooky" from school and getting in with bad company. Being in a constant state of nervous tension they were unable to control themselves in small things, and soon wound up in court for a serious offense. We do not doubt that the teeth—or lack of them—should receive a very important consideration in these cases.

As stated in a previous paper, the nourishment was below normal in 52 per cent. of those boys with one or more bad teeth, whereas only 10 per cent. are poorly nourisht in those with good teeth. Out of the 52 per cent. we cannot say that poor nourishment is due entirely to defectiv teeth, but of the 15 per cent. showing poor nourishment with good teeth over 60 per cent. were cigaret smokers and had nervous disorders. It is also an interesting fact to know that nutrition was poorest in those having but one bad tooth, rather than those having many. This again illustrates the nervous control and relation. The effect of poor nourishment will be taken up later.

ADENOIDS AND TONSILS.

Much has been written and discust concerning the effect of adenoids and tonsils on the mentality of the child. It has been shown that their removal is almost always followed by improvement, especially physical and nearly always mental. Likewise our work has shown an improvement morally. Their removal relieves the nervous reflex arc and thus tends to allay irritability—the beginning of badness.

This is illustrated in the case of a little Jew, 12 years old This boy had a Russian Jew step-father, who traveled and sold cheap jewelry, and his mother kept a small grocery store. In other words, his home was broken. The boy smokt cigarets and his heart showed the effect. He was a persistent truant. This and disobedience were his greatest faults, altho at one time he helpt roll a drunk, and at another snatcht a woman's purse at an Orpheum matinee. He had appeared in court and been let off by promises, etc., so many times that he had completely demoralized the court rules concerning the disposition of such cases. The judge was thru with him, as were all probation offers, and the order had been written for "Whittier." But by special request, the judge changed the order, and allowed me to remove his adenoids, just to see the effect. This boy changed his whole behavior and conducted himself differently almost immediately. He workt himself up to be an officer at the parental school, and altho many of his associates did run away, it was nearly a year before he appeared in court for any offense.

Another case of removal of adenoids improved the hearing to such an extent that a boy, who before had the reputation of disobedience, was changed at once with return of hearing. Thus defectiv hearing and incorrigibility are sometimes closely associated. Many a boy has the reputation of being disobedient thru defectiv hearing.

EYES.

Defectiv eyesight is the source of constant irritation—giving rise to headache—irritability, and often accounts for truancy and its evil associations.

We have persistent truants who, when given properly fitted glasses, became good pupils and obedient boys.

GENITO-URINARY SYSTEM.

The phenomena of irritability is greatest when derived from the genito-urinary system. Normally at puberty the centers of reproduction predominate, and tend to block the weaker impulses. This is exaggerated when we have abnormal conditions.

In many cases we remove the cause by a needed circumcision, which breaks up the adhesions and removes the material which has been irritating the sensitiv terminal nerves. Now the arc is broken. The exaggerated tendencies cease. The other centers predominate and the boy gets control of himself. This is illustrated by numerous cases. Boys who had appeared in court an average of six times every three months before the operation did not appear for over eighteen months afterward.

Healthy boy; age 14, parents separated owing to the father's drinking. Boy smoked cigarets and had tobacco-markt teeth and a heart lesion. Sight, hearing and teeth good; acne pimples on face, and has thick black hair; untidy in his dress. Began by being cross and disobedient at home. Was abusiv to small boys and the leader of a bad gang. He came into court for the first time for stealing a wheel. Six months later for burglarizing a house and taking a number of things. Four months later he appeared for stealing $15.00 from a blind man, and one month later than this he was finally brought in for an attempt to rob the postoffice. The boy was again given a good examination and consent obtained from the mother to perform the circumcision, which the boy needed badly. As a result, a markt change in his character followed. The boy settled down; became less irritable; no longer cared to be the bully; got a job and has since done well. It has now been over three years, and he has never appeared in court.

Another boy named H——— was given up as a hopeless, incorrigible, truant, who was disobedient and disrespectful to his parents and the law. A similar operation was performed and he experienced a similar change, and it has been over six years since he has been in court, and reports show he is doing well.

Age 15, well-developt boy. Father a carpenter, mother dead, but has a step-mother during the last six years. He began running with bad company, and one Sunday broke into a bicycle store and stole different parts of a wheel. This boy was brought into court. Later was operated upon and allowed to go home. His step-mother told me several months later that H——— was a different boy; that he had a complete change of disposition. He was as good as a girl to help about the house. Washes and wipes dishes, and even stays at home and is so good he has started to learn cooking. Lately he got a job and gets home early every night, and has never returned to court in over three years.

Age 14. Mother dead five years. Boy lives with a sister and brother-in-law. Father brass cutter. This boy was taken in court a number of times for being out late and frequenting moving pictures. He gave a history of being irritable and saucy to his sister. The same operation changed him so that for two years he has a good report.

Age 10. Father saloon man. Poorly nourisht, pale-faced, nervous, flat-chested boy. Brought in numerous times for truancy, three times for burglary, once for stealing a wheel, and finally for stealing a purse in a grocery store. After receiving attention, this boy has changed and given no trouble and has given good reports for over three years.

Age thirteen. Bad home. Parents quarreled, and boy drank wine, beer and whiskey at home with them. He was poorly nourisht and had a peculiar husky voice. Was very shy and beyond control at home. He was a persistent truant. Out late nights. Turned in fire alarms, stole bicycles, etc. For two years this boy averaged a crime a month, and I am informed of sixteen times stealing that were not recorded. An examination showed a markt defect, and he was attended to, the same as the other boys in this group. The arc was broken, and a periodicity of his crimes lengthened for over a year instead of a month, during which time he did not appear in court. He finally fell in love with his school-teacher, who loved and kist and carest him just as puberty was dawning, and the boy went to the bad and wound up at Whittier Reform School.

The case of George and Gus, John and James, and fifty others, could be mentioned who have received attention and given evidence that the irritation of the genito-urinary tract has been one contributing element towards their delinquency.

POOR NOURISHMENT.

Poor nourishment has contributed to delinquency, as illustrated in the following cases:

Age 15. Mother dead. Father drunkard. Blind sister keeps house for father and boy. The boy is undersize, weighing only 70 pounds and being only 4$^1/_2$ feet tall. He is pigeon-breasted and poorly nourisht, but possesses no marks of physical defects. His meals were irregular and he drank much coffee, because this was the principal diet of his father. The boy had to lead his sister to the stove to cook. This, and the fact that the father was a poor provider, gave Frank little to eat. The boy became incorrigible, disobedient and would not stay home. Was out nearly every night, into mischief, and when he could get the money went to the moving pictures. Finally got in with a bad lot of fellows and stole a cornet and a fountain pen. He had appeared in court a few times, but the last time was sent home under instructions by the judge "to put some flesh on and gain five pounds a week." He was put on a diet and gained six pounds the first week and five the second week. This gain was accompanied by a markt change in his disposition and by becoming better natured, staying home, helping sister, and trying to keep his father sober.

A colored boy poorly nourisht. He was trained to be a jockey. By baths, diets and sweats he was reduced 20 pounds or more so he could ride in the races. While thus reduced his moral resistance was at low ebb. He robbed the very man who was trying to help him, and then ran away. He was arrested on the train between here and Oakland on suspicion, the suspicion being aroused by a gentle tip he gave the porter of $87. He was sent to the parental school and fattened up, and his moral stability more or less returned.

There is a home in the foothills not far from Los Angeles where there are plenty of home products and good things to eat, and a matron, Mrs. Strickland, simply stuffs the boys, where many poorly nourisht incorrigibles are now sent. The boys improve here and do well, and the secret of her success lies in the fact that all the boys are almost overfed.

Diet itself is a very important item, and a few cases have become irritable and ugly as a result of improper food. For instance, one boy was fed three times a day on mush; another on dried fruit, olive oil, stale bread; and still another on sardines and canned goods. When these boys were placed on a proper diet, a change was noticed soon after in their dispositions.

RHEUMATISM.

Many cases of irritability and incorrigibility of obscure character, I believe, are due to rheumatism. A private case, a good family history, well-nourisht child, ordinarily of good, cheerful, playing disposition, becomes peevish, cries easily, is cross and ugly. Throws her doll across the room; tears her dresses; grinds her teeth and screams. Makes faces at you, and cries with the least provocation. Pulls your hair when you examine her. A girl who was always obedient before. Now if you ask her to be quiet, she stands on her head, spits at you and scratches you. Examination showed a well-nourisht child and practically no physical defects. There was a slight rise of temperature, throat a little red but not complaining of being sore. Stethoscope revealed endocarditis. This child had rheumatism, and no doubt had some little trouble in her joints. All of her ugly disposition disappeared under the administration of anti-rheumatics.

Boy aged 12. Father employed during the day, not returning until late at night. Mother and the three other children away from home sewing all day. The boy is left to shift for himself. His favorite haunt was near the river bed, and his parents give a history of night cries and some complaint of "growing pains." His school-teacher has tried in every way to win the boy. Is fairly good in his deportment, but is thoughtless and indifferent to the law, and disrespectful to orders and rules. He frequently runs away from home, and during the last vacation stole a ride on a freight train to Long Branch. Smokes cigarets. The examination of the boy shows he is markedly undersize and possessing a markt endocarditis. No one can doubt but that rheumatism was one of the contributing causes of this case.

INTESTINAL IRRITATION.

Like cases of rheumatism, many obscure cases of irritability are often found to be due to intestinal irritation.

Boy six years old. Good parents and good home training. Boy well nourisht; hardly a physical defect to be found. Gets spells of being sulky; will not allow anyone to touch him; gets up crying and cries most of the day; impossible for mother to please him by any means; he strikes and kicks her, and lies on the floor in the corner and sulks. The mother has learned that one dose of castor oil will fix this boy in a few hours. The change in his disposition is marvelous, but will return again as soon as he has eaten enough truck between meals to cause the same irritation.

A little boy about 9 years old, and had a most amiable disposition. He was so good that all the neighbors and storekeepers thought so much of him that they were feeding him candy and sweets. In spite of his popularity, he became very changed at home; once an obedient boy, now he began to talk back to his mother, and be cross to her. The boy apparently could not help it, and would at first break down and cry after each cross word to his mother. It seemed to hurt him to think that he was mistreating his mother. Later the edge wore off, and it did not seem to bother him so much to talk back to her. He would run away and beg money from strangers, and if he could not get it that way, he would take it from home. The money was always used to buy candies and sweets. The parents had requested the stores not to give him anything, so he now bought to satisfy the craving. The boy was acting so bad and disobedient that the parents consulted me in regard to him, and were very much grieved about his stealing at home, and were anxious, if possible, to find a cause for it. A physical examination revealed no markt defects. There was a slight mass, however, in the region of the cecum. He was given a good cathartic, and advised to be kept away from sweets for a week. After two or three brisk actions the mass in the side disappeared and the stools were found to contain raisin seeds, stems and seeds, small pieces of citron, very small round white pieces of what were supposed to be the remains of candy marbles. In addition to all this, there were numerous small pieces of paper, which the boy in his haste had evidently eaten with the candy. You would scarcely believe the change that came over that boy. He was as obedient, cheerful, and as good a boy as anyone would want.

TOXIC.

Meningitis, infectious and contagious diseases usually begin by noticeable change in child's disposition. And in some of our cases the irritability seems to have left an after-effect upon the moral character.

Mothers often insist in open court, and privately, that her boy has been different since certain infectious disease. This is well illustrated by Case 2.

J———, age 15. Good, obedient, moral boy before typhoid changed; absolutely changed since then so much so that parents say you scarcely recognize him as the same boy. Similar changes seem to be true of other infectious diseases.

In addition to all the cases mentioned above, there are numerous other obscure causes which no doubt contribute to juvenile delinquency. Crime and badness in boys often exhibit a periodicity similar to epilepsy. This is true of truancy and certain forms of stealing. This periodicity at times is often associated with epilepsy.

Cases could be cited where undescended testicles, hernia, hypospadius, phymosis, small meatus, variocele, abnormally large or infantile development have also apparently contributed to juvenile delinquency, as do also worms, profuse hemorrhage of the nose, persistent headache, injury to head, etc. The courses of irritability are so obscured, and the physiology, psychology of puberty, so undevelopt, we feel that further investigation will reveal new relations.

We as physicians and you as teachers and parents should have the interest of the boy at heart, and always bear in mind that a boy can not develop rightly, if his senses are wrong or the sensory impulses from physical irritations arising from within the body or those of environment, are so strong as to interfere with the development of the will—the basis of character.

BAKER-DETWILER BLDG.

FROM THE FIELD.

THE DETROIT MEETING.

Preparations for the 41st annual meeting, which will be held in Detroit on June 9–12, 1916, are making satisfactory progress. Particulars about the headquarters' hotel and local arrangements will be given in a future number of the Journal. This article is concerned more with the promised program.

Following the scheme adopted a year or two back, whereby the most salient questions of social medicine would pass under review once every five years, particular attention will be paid at the next meeting to LEGISLATION AND MEDICINE, which is a much broader topic than may appear at first reading. Indeed it is a twofold question.

A. The Relation of Legislation to the Practice of Medicine.
  I. Legislation regulating entrance upon the practice of medicine.
  II. Legislation affecting the status or the duties of physicians.
    1. Legislation creating civil positions for physicians, as physician to state hospitals, in public health work, in industries, etc.
    2. Legislation making certain duties compulsory.
    3. Legislation affecting the recompense of physicians.
      (*a*) Workmen's compensation acts.
      (*b*) Social insurance against accident, disease, old age and unemployment.

B. The Relation of the Science of Medicine to Legislativ Enactment.
  I. The sanitary code.
  II. Legislativ control of the drink problem.
  III. Industrial legislation.
    1. Child labor.
    2. Women wage earners.
    3. Housing.
    4. Factory control.
  IV. Legislation for the care of exceptional classes.
    1. The physically defectiv.
    2. The mentally defectiv and insane.
    3. The delinquent.

C. A practical demonstration of what the large industries of Detroit are doing for employees by inspection of at least three of the largest and most progressiv of the manufacturing establishments.

Of course it would be impossible within the limits of the meeting to discuss at any length all these questions suggested in the above outline and while the Program Committee doubtless expects to emfasize certain fases, voluntary papers upon any of the subjects indicated will be considered by the Committee. Already promises of papers have been made by:

Hon. Thomas Mott Osborne, Warden of Sing Sing.

Hon. Harry Olson, Chief Justice of the Municipal Court of Chicago.

Mr. Vance Thompson, author of "Drink and Be Sober."

Dr. Herman Biggs, Health Commissioner of the State of New York.

Mr. Lawrence Veiller, Secretary of the National Association on Housing.

Dr. John VanDuyn, Syracuse, N. Y., Surgeon of the D. L. & W. R. R.

With these papers as a nucleus, the meeting cannot fail of being one of merit and it can be made one of superlativ excellence by the hearty coöperation of every Fellow of the Academy. This coöperation can be shown by contributing papers, arranging to be present and take part in the discussion and by personally bringing the Academy and its mission to the attention of physicians for the purpose of increasing the membership roll and of others who are interested in the questions that their coöperation may be secured thru Associate membership.

If the Program Committee be given the privilege of indicating the papers to be read by title only at the meeting, there need be no limit to the number of papers submitted and accepted as the fuller the discussion, the greater the interest in the printed transactions of the Academy in the Journal. Advise Dr. John L. Heffron, of Syracuse, N. Y., the Chairman of the Program Committee, of your wish to prepare a paper; and the Secretary of the Academy, Dr. Thomas Wray Grayson, 1101 Westinghouse Bldg., Pittsburgh, of your desire to assist him in the propaganda for the Academy by the use of application blanks, etc.

The Academy met in Detroit in 1892, at which time Dr. Leartus Connor coined the frase "Medical Sociology" which was the inspiration leading the Academy out from the discussion of purely educational topics to the broader field of social medicine and the return to Detroit after nearly a quarter of a century should be signalized by a large and enthusiastic gathering.

* * *

MEMBERSHIP IN THE AMERICAN ACADEMY OF MEDICINE.

It may be that the above article will be read by some who are not already in affiliation with the Academy who would like to know the conditions of membership.

The activ membership, or Fellows, is confined to physicians. At the organization of the Academy, when there was no educational standard for the degree of doctor of medicine, it was forced to formulate an educational requirement to emfasize the reason of its organization—the lifting of the educational requirements of the American physician that they might compare favorably with those of continental Europe. To this end it required the possession of the first degree from a literary or scientific college preliminary to the acquirement of the M.D. degree. Since its organization great changes have taken place in the educational world. The present high school has developt; combined courses leading to both an academic and technical degree have been devised; state boards of medical examiners have been created and the better class medical school requires evidence of a preliminary education which makes the M.D. degree fully equal to the academic requirements demanded by the first qualifications for Fellowship in the Academy. As a consequence the Academy, to fit itself to modern conditions, could no longer insist upon the possession of the first degree as the only evidence of a proper preliminary training and has dropt this specification from its constitution while still requiring that its Fellows be liberally educated physicians, which fact is to be determined by the Council upon each applicant.

The development of the field of investigation of the Academy from the narrower educational question to the broader one of general social medicine makes it desirable to gather to its membership those who are actively engaged in the study of any of the problems included under this comprehensiv term or who are giving their service directly to any department of social medicine. All such are cordially invited to become Fellows of the Academy which can be done by application, endorsed by a present Fellow, the favorable recommendation of the Council and election by the Academy. Application blanks may be obtained at any time from the office of the Secretary.

The very frase, social medicine, indicates that this field is not confined exclusivly to physicians, and it was soon found to be necessary in order to fully investigate and understand the complex problems to be considered required the activ coöperation of those who are not physicians. To secure this the Associate membership was created. Associate members are elected by the Academy from among those who are engaged in any way in the study or practice of any department of sociology. Associate members are excused from any financial obligation, have the privilege of the floor at the time of the meetings and are invited to participate in the investigations and discussions by the Academy. Blank forms of proposal can be obtained from the Secretary.

* * *

By the announcement on November 12th of the United States Public Health Service that the cause of pellagra has been discovered, medicine makes another claim to be an aid to commerce and industry. If the claim is substantiated by subsequent investigation and experience it will prove to be a boon to those parts of the country where pellagra is prevalent as it is estimated that at least 7500 deaths in 1915 will be caused by this disease. The concluding experiments were made upon the convicts on the farm of the Mississippi State Penitentiary, where 11 volunteered and were fed upon a one-sided diet, largely composed of the carbohydrates. Every precaution to prevent error was made and 6 out of 11 developt the cutaneous symptoms which were diagnosed as typical pellagra by several dermatologists. No case of pellagra had occurred on the farm previously and none of the remaining 60 or 70 convicts fed upon a balanced ration developt the disease. On the basis of this discovery the states of Mississippi, Louisiana and Florida have made their propaganda thru their respectiv boards of health for the eradication of the disease.

We await further developments with interest for as far as this individual experiment is concerned, while suggestiv it has not demonstrated the actual discovery of the cause of the disease. That six cases of mild pellagra developt out of a possible eleven under the enforced conditions seems to be more than a mere coincidence and yet it is less than 56 per cent. of the possibility. One can assume as a working hypothesis that this particular diet places individuals in a condition wherein the cause of the disease can develop and ultimately why six were afflicted and five were not will be found and the true cause made known. However, for the purpose of prevention it makes very little difference whether one knows the real cause or knows how to prevent that cause from being activ. So the Public Health Service is again to be congratulated for its beneficent labors for humanity.

* * *

The statement that an army travels on its stomach is a sentiment full of wit and yet a wider application than is usually made applies to it: it extends far beyond the commissary department. Lady Macbeth had the greater vision when she wisht her guests to have good digestion wait on appetite. It is not only necessary that the food be sufficient and fit but that the physical stamina of the trooper be fit with sufficient health to assimilate the food that is supplied. Hence while less imaginativ it can be stated that the success of a campaign depends upon the efficiency of the medical department of the army. Hence the subjoined resolutions adopted by the Southern Medical Association at its meeting in Dallas, Texas, November 8–11, are timely and have the right ring.

WHEREAS, The President and the Honorable Secretary of War have announced in the public press that a scheme for the reorganization of the army will be presented to Congress at its coming session, which will materially increase the military establishment, and

WHEREAS, we recall the indignant protests and criticisms of the nation at the failure to provide adequately for the sick and wounded at the beginning of the Civil War and the Spanish-American War, and

WHEREAS, it is known that this failure was due to the lack of a sufficient number of medical officers in the regular army and a means for increasing the medical establishment at the outbreak of war, and

WHEREAS, in spite of the lessons of the Spanish-American War, which were fresh in mind in the reorganization of the army in 1901, the medical department was not properly increast, and no provision was made for its expansion in time of emergency, and

WHEREAS, to correct the defects in the 1901 legislation, subsequent legislation was necessary in which the medical profession of the United States was called on to assist.

Therefore, be it Resolved by the Southern Medical Association, in session at Dallas, Texas, that the Secretary of War be petitioned to make adequate provision in the reorganization of the army about to be presented to Congress for a sufficient number of medical officers for the regular establishment, which provision should aggregate a proportion of medical officers of at least seventy-five hundredths of one per cent. of the enlisted strength of the army or such number as the Surgeon-General of the army may deem necessary, and

Be it further resolved that the Secretary be petitioned to make provision in this reorganization for the expansion of the medical department at the beginning of war, by calling into service in the Medical Reserve Corps physicians from civil life who have been instructed in their special duties as medical officers in our summer camps, and otherwise, as the War Department may see fit.

* * *

The American Association for Labor Legislation has drafted a bill to establish in New York a system of health insurance which is intended to be a model bill, its general purpose being to provide, at the joint expense of the worker, the employer and the State, for health insurance for the worker, and for medical care for himself and his family. As drafted, the bill applies to all those engaged in manual labor and to all others earning less than $100.00 a month. It would provide every insured worker with medical care including nursing attendance, hospital care, medical and surgical supplies, and a cash benefit equal to two-thirds of the wage for a maximum of twenty-six weeks in a year; to the wife it offers special care at childbirth, and if she is also insured a cash benefit for eight weeks; and to the entire family it grants medical care and a funeral benefit on the death of the insured wage earner.

We have not seen the text of the bill but it would be remarkable if the same care were bestowed upon the welfare of the physician as upon the comfort of the workingman and if statements current in medical journals of late be true, many physicians would be clast as beneficiaries of the bill because their income does not exceed $100 a month. It is only another bit of evidence of the necessity of careful investigation of this whole subject by the medical profession and the formulating of principles to be incorporated in such acts, fair alike both to the patient and the doctor.

NOTES AND NOTICES.

ERRATUM. Please read June for September in the footnote on page 272 of the October number of the JOURNAL.

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Among our recent exchanges is the monthly bulletin of the Office International D'Hygiene Publique, créé a Paris par l'arrangement international du 9 Décembre 1907, which is full of valuable information regarding hygienic problems of the various countries participating. It is particularly valuable because each number has an analytical summary of its contents assisting to ready reference. The bulletins will be kept on file at the Academy office and search will be gladly made for any Fellow for any topic. Access can be given to these articles by means of the post upon the condition of the borrower paying postal charges both ways.

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ANNUAL REPORT OF THE NORTH AMERICAN CHILDREN'S SANITARIUM FOR THE TREATMENT OF SURGICAL TUBERCULOSIS, Atlantic City, N. J., 1914-1915.

We are in receipt of the above report which shows the splendid work a great newspaper can accomplish when so disposed. In 1901, realizing the terrible fight for an existence which the children of the slums had to wage during the summer months, it instituted a fund which enabled it to take these unfortunates on all-day outings to Fairmount Park, hoping to make life more endurable for them. It found, however, that some were too weak to make this trip and so rented a cottage at Atlantic City where such ones could be taken and in eight years more than 1000 children were cared for during the hot months. It was then discovered that many who were suffering from bone tuberculosis were greatly benefitted by the salt air. Consequently, in 1909 the sanitarium was limited to children suffering from this disease, a home was bought and under the guidance of the freely-contributed services of some of the best surgeons and physicians in Philadelphia, Atlantic City and Camden these children received the very best treatment, enabling them to be returned to their homes strong and healthy. The Sanitarium has become an all-year-round institution which has, of course, increast the expenses and when in 1914, it faced a financial crisis kind and generous friends made it possible to continue another year. It is hoped the institution may be enabled to carry on its splendid work indefinitely.

* * *

In these days when something's doing in the world and there are so many diverse opinions concerning things done, the *Literary Digest* proves to be of more than usual value and interest. It not only keeps one informed of what is transpiring in the world but as well enables one to learn the opinions of others concerning them.

* * *

Another journal of value, altho constructed on entirely different lines from the *Digest*, is the *New Republic*, just entering upon the second year of its existence with indications of increasing strength in each number. The sub-title, "A journal of opinion," expresses the characteristic of this excellent weekly for it not only reviews the happenings in the world but gives a frank opinion concerning them. Even when the reader does not agree with the viewpoint of the opinionator it is worth while to read the article to get a glimpse from the author's viewpoint. While if, perchance, there is an agreement between author and reader it is likewise helpful to have other eyes describe the view from the reader's viewpoint.

* * *

It is pleasing to note that the Central Indiana Hospital for the Insane is coöperating with the Medical Department of the University of Indiana in giving the students of the University clinical facilities for the study of mental diseases, altho this is nothing new for them since the circular at hand indicates it is the 16th annual program. The lectures are made a part of the University course and give attention to abnormal psychology and psychiatry in which the didactic presented by a professor of the University and the clinical, by a member of the hospital staff, are mingled. It would be a boon to the country were more of our general hospitals for the insane made teaching centers.

* * *

The American Association for Labor Legislation will hold its ninth annual convention in the Shoreham Hotel, Washington, D. C., December 28th and 29th. Chief among the topics for discussion will be the LaFollette law for the protection of American seamen; the New York Industrial Commission; health insurance for wage earners; also the progress made thruout America in industrial hygiene in relation to dangerous trades, child labor, protection for female wage earners and factory situation.

* * *

The second Pan-American Scientific Congress will be held in Washington, D. C., December 27, 1915, to January 8, 1916, inclusiv. The nine sections of the Congress with their chairmen are as follows:

I. Anthropology, William H. Holmes, Head Curator, Smithsonian Institution.

II. Astronomy, Meteorology, and Seismology, Robert S. Woodward, President Carnegie Institution of Washington.

III. Conservation of Natural Resources, Agriculture, Irrigation, and Forestry, George N. Rommel, Chief, Animal Husbandry Division, Bureau of Animal Industry, Department of Agriculture.

IV. Education, P. P. Claxton, Commissioner of Education.

V. Engineering, W. H. Bixby, Brig.-General, U. S. A., Retired.

VI. International Law, Public Law, and Jurisprudence, James Brown Scott, Secretary, Carnegie Endowment for International Peace.

VII. Mining and Metallurgy, Economic Geology, and Applied Chemistry, Hennen Jennings, Former President, London Institute Mining and Metallurgy.

VIII. Public Health and Medical Science, William C. Gorgas, Surgeon-General, U. S. A.

IX. Transportation, Commerce, Finance and Taxation, L. S. Rowe, President, American Academy of Social and Political Science.

As many of the delegates will be accompanied by their wives and daughters, a conference of women will be held in connection with the Congress when several of the most prominent women of Pan-America will discuss topics of interest to women on educational and social subjects. All the sessions of the Congress will be open to the public.

ACADEMY PERSONALS.

BECHET, BULKLEY. Dr. L. Duncan Bulkley has associated Dr. Paul E. Bechet with him in practice.

HOLTON, DR. HENRY D., Brattleboro, Vt., was elected an honorary member of the American Public Health Association at its recent meeting in Rochester, N. Y.

KICKLAND, DR. WILLIAM A., Fort Collins, was elected a Vice-President of the Colorado State Medical Society at its last meeting.

SLEYSTER, DR. ROCK, Waupun, was re-elected Secretary of the Wisconsin State Medical Society at its recent meeting.

STRAW, DR. AMOS GALE, sailed on the steamer Noordam for Falmouth, England, on November 17th with the Third Harvard Surgical Unit.

WILBUR, DR. RAY LYMAN, Palo Alto, Cal., has been elected President of Leland Stanford Junior University.

At the meeting of the Medical Society of the State of Pennsylvania held in Philadelphia in September the following Fellows were elected to office: Dr. Edgar Moore Green, Easton, *Second Vice-President;* Dr. Cyrus Lee Stevens, Athens, *Secretary;* Dr. George W. Wagoner, Johnstown, *Treasurer.*

NECROLOGY.

1913.	O.	9.	H. H. Sloan.
1915.	Je.	26.	Eugene I. Santee.
	N.	3.	George M. Sternberg, Honorary member.

GLEANINGS.

We cull the following from a very excellent article in the *Training School Bulletin* (Vineland, N. J.) on "The Feeble-Minded in the Country," by Professor Ernest R. Groves, Durham, N. H.:

"Society will surely be hampered in its progress unless the State adopts a policy which will not leave the ament to the indifference and misconception of the small community. We need not only the city psychologic clinic: we need also the State clinic. The State department of public education should be prepared to hunt out the defectiv, and the State needs to be able to provide rational treatment for all defectivs found. Such work must be carried on largely thru the schools. Professor Pyle in the *Psychological Clinic* for February, 1913, has drawn up a very interesting suggestion for the organization of rural clinic work by means of a state-wide examination of school children. No other policy promises to meet this problem. It may seem costly, but only to those who do not realize the burden of the feeble-minded who are without proper supervision. * * *

"Men who wish to conserv country life must take to heart this fact of the danger of the ament in the country. Nothing will so certainly discourage the substantial stock in the country and so stimulate its movement to the cities than to permit the ament to thrive and enjoy freedom in the country environment. The whole problem needs to be taken in hand by the forces of the State as a matter of efficient administration. Science has already furnisht the information which justifies another step in the control of amentia. The country needs the advantages of this new progress no less than the cities as every student of rural moral problems must recognize. Like all such matters it is mostly a problem in educating public opinion—in this case especially educating school officials in the country."

LITERATURE NOTES.

THE DUCTLESS GLANDULAR DISEASES. By WILHELM FALTA, Vienna. Translated and edited by MILTON K. MEYERS, M.D., Neurologist to the Lebanon Hospital, and to the Dispensaries of the Jewish and St. Agnes

Hospitals, Phila. Foreword by ARCHIBALD E. GARROD, M.D. (Oxon) F.R.C.P. (London), F.R.S., Physician to the St. Bartholomew's Hospital, London. Price, $7.00 net. Pp. xix + 673, with 101 illustrations. Philadelphia: P. Blakiston's Sons & Co., 1012 Walnut St.

The author of this interesting book is so well known to the medical profession that his work will, no doubt, attract attention from the medical men generally. His introduction treats quite exhaustively of the historical development and definition of the subject. Whether or not the reader agrees with the author's views respecting the grouping and reciprocal action of the ductless glands, he will, nevertheless, find this work thoroly instructiv. The author's views will probably not agree with the general conception in America of the function of the ductless glandular apparatus. They are, nevertheless, interesting. Many of us will, no doubt, think that there has been a tendency among some recent investigators to claim too much for the ductless glandular system and to jump to conclusions, but in this work the author shows a tendency to counterbalance this drift. It should be read carefully by those who desire to keep abreast of the various modern theories of disease and inasmuch as it is the first time that these maladies have been discust in a single volume, it should be welcomed by the members of the medical profession. The inter-relation of the nervous system and the endocrine glands receives large consideration from the author. This inter-relation is well brought out in his discussion of the subject of diabetes. The work is the more valuable because it is the product of the labor of a physician who combines with experimental research in the laboratory results of bed-side observation.

EDGAR MOORE GREEN.

EMERGENCY SURGERY. By JOHN W. SLUSS, A.M., M.D., Associate Professor of Surgery, Indiana University School of Medicine; Ex-Superintendent Indianapolis City Hospital: Surgeon to the City Hospital. Third edition, revised and enlarged, with 685 illustrations, some of which are printed in colors. Pp. 832. Bound in flexible leather. Price, net, $4.00. Philadelphia: P. Blakiston's Son & Co.

A new work on surgery at this period of superabundance of surgical literature must run the gauntlet of sharp criticism and be prepared by undoubted intrinsic merit to win its way to favor and general adoption by the profession. The fact that Sluss's book has gone to a third edition indicates that it *has* found favor.

One may differ from Dr. Sluss in his statement "That its [surgery] beneficence shall be denied a place in every practitioner's art is repugnant to the spirit of modern times" but we cannot deny that Dr. Sluss has given to the profession a useful book.

The work probably will be more useful to the general practitioner than to the surgeon. It is probable that the author intended this. For the surgical student and surgical practitioner a work less diffuse, one which included fewer chapters and one confined to the emergency of injuries might have been more grateful and useful.

The book shows many signs of hasty revision and preparation, especially the enlarged chapters on fractures, military surgery and gunshot wounds. As a reference book for the general practitioner, however, the book may be commended and it will be a useful addition to his library. WILLIAM L. ESTES.

PROCEEDINGS OF THE NATIONAL CONFERENCE OF CHARITIES AND CORRECTION at the forty-second annual session held in Baltimore, Maryland, May 12–19, 1915.

After an absence of 25 years the National Conference of Charities and Correction again met in Baltimore under the presidency of Mrs. Mary Willcox Glenn and Baltimore was indeed fortunate in having such a conference in its midst, for it drew together some 2600 men and women who are working for the betterment of humanity. The following topics indicate the breadth of the discussions: the Family and the Community; Children; Health; Social Hygiene; State Care of the Insane, Feeble-Minded and Epileptics; Corrections; Public and Private Charities; Social Legislation; and Education for Social Work. It would be a difficult task to commend any one of these divisions for they were all presented by those who have made a study of their particular subject but we do commend the entire volume to the social worker who will find it to be a valuable work of reference while the general reader will find the particular topic in which he is interested well presented.

DICK DEVEREUX, A STORY OF THE CIVIL WAR. By DAVID TOD GILLIAM. 304 pp. Cincinnati. Stewart & Kidd Company. Price, $1.35 net.

It is not often that the man who is skilful with the scalpel is facile with the pen; still rarer is that one who gets the vision of nature of the disease-process from tangible symptoms to exercise the same power of imagination in the writing of fiction. Consequently we always look forward to reading a novel by a physician with some apprehension. In the present instance we could have spared our fears: Dr. Gilliam has made good.

The scene of the story is largely in Columbus, Ohio, prior to 1861 and the particularity with which places are mentioned leads one to infer that the story is not purely imaginativ. The faithful portrayal of the social life of the period gives both charm and worth to the volume.

But the book does not confine its environment to Columbus, it makes excursions into the Mountains of Virginia, and into the War for the Union, affording both variety and adventure. The plot of the story is developt out from a medical problem—the hero is a victim of dual personality. To tell more would deprive our readers of a pleasure when they read the book itself.

The story is well told; there is very little of the puppet in the characters—they are creatures of flesh and blood—and the dialog is natural. And, while a problem story, it is neither a dissecting room nor a pathologic laboratory. It does not exhibit the gruesome but maintains a sympathetic, kindly interest from start to finish. CHARLES MCINTIRE.

THE PHYSICIAN'S VISITING LIST (LINDSAY & BLAKISTON'S) FOR 1916. Sixty-fifth year of its publication. Philadelphia: P. Blakiston's Son & Co. (Successors to Lindsay and Blakiston), 1012 Walnut St.

Notwithstanding the changes in the science and art of medicine in the sixty-five years since the first issue of this visiting list was made, there still remains the necessity for a convenient memorandum book for the physician in general practice. This book was devised to meet that want in the year of its origin and has supplied the want to many physicians in the interval and is still among the most convenient and useful of the several annuals issued for the same purpose. To have gained such a reputation it has kept abreast of the times in its useful tables of information, so that while an old annual it is by no means aged.

ACKNOWLEDGMENTS.

[It is intended to acknowledge all reprints received since the issue of the last number that are not otherwise noticed. The present list records the publications received (other than periodicals in exchange) from October 1 to November 29, 1915, inclusive.]

This acknowledgment is considered a full return for the courtesy of sending us the publication. Additional notice will be given when space permits. Publications treating of medico-social questions will be given precedence in the fuller notice.

United States Bureau of Labor Statistics: Bulletin No. 167, Minimum-wage Legislation in the United States and Foreign Countries. Bulletin No. 168, Wages and Hours of Labor in the Iron and Steel Industry, 1907 to 1913. Bulletin No. 169, Decisions of Courts Affecting Labor, 1914. Bulletin No. 171, Union Scale of Wages and Hours of Labor, May 1, 1914. Bulletin No. 173, Index Numbers of Wholesale Prices in the United States and Foreign Countries. Bulletin No. 177, Wages and Hours of Labor in the Hosiery and Underwear Industry, 1907 to 1914. Bulletin No. 178, Wages and Hours of Labor in the Boot and Shoe Industry, 1907 to 1914. Bulletin No. 179, Industrial Poisons Used in the Rubber Industry. Monthly Review of the Bureau, October and November, 1915. Bulletin No. 174, Subject Index of the Publications of the United States Bureau of Labor Statistics up to May 1, 1915.

U. S. Bureau of Mines: Technical Paper No. 97, Saving Fuel in Heating a House. Technical Paper No. 111, Safety in Stone Quarrying. Technical Paper No. 115, Inflammability of Mixtures of Gasoline Vapor and Air.

New York State Department of Labor: Bulletin No. 74, Statistics of Trade Unions in 1914.

Russell Sage Foundation, Department of Surveys and Exhibits. The Relation of the Social Survey to Public Health Authorities. Activities and Publications.

School Hygiene. Survey of Schools in Manatee County, Fla. By J. A. Nydegger, Surgeon, U. S. P. H. S.

Report of the Medical and Sociological Departments of the Colorado Fuel and Iron Company, 1914–1915.

Office International D'Hygiene Publique, Aout, Septembre, 1915.

Social Service Review, October, November, 1915.

Child Betterment and Social Welfare, October, November, 1915.

American Socety for the Control of Cancer: Prevention of Cancer Series, Pamflets 1–7 by Drs. Joseph C. Bloodgood, Baltimore; Franklin H. Martin, Chicago; Hugh H. Young, Baltimore; Henry H. Hazen, Washington, D. C.; William L. Rodman, Philadelphia.

Legal Liability of Producers of Biological Products. By Charles M. Woodruff, Detroit.

American Medical Association: Making the Right Start.

Woman Suffrage. By Robert S. Taylor.

INSTITUTIONS OF LEARNING.

Connecticut: Wesleyan University, Bull. 9, 2, S. '15; Yale University, Reports of the President and of the Treasurer for 1914–1915. *Illinois:* Wheaton College, Bull. xiv, 4, O. '15. *Indiana:* Purdue University, Agricultural Experiment Station, Bull. No. 181 and No. 182. *Iowa:* Coe College Courier, xvi, 2, S. '15; Parsons College, Bull. xv, 2, O., 3, N. '15. *Minnesota:* University of Minnesota, Bull. xviii, 13, S. '15. *Nebraska:* Bellevue College, Bull. xiv, 4; University of Nebraska, Agricultural Experiment Station, Bull. No. 31; No. 147, No. 149, No. 152 and No. 153; Twenty-eighth annual report; College of Agriculture, Bull. No. 33. *New York:* Columbia University, University Bibliografy, 1914; N. Y. University School of Commerce, Accounts and Finance, Bull. x, 15, S. '15. *Ohio:* University of Cincinnati, Record, xi, 4, O. '15; Western Reserve Univ., Bull. xviii, 5, S. '15. *Philippine Islands:* University of the Philippines, Ninth annual announcement and catalog, 1915. *Rhode Island:* Brown University, Bull. xii, 4, O. '15. *Virginia:* University of Virginia, Bull. viii, 4, Ag.; 5, O. '15.

HOSPITAL REPORTS.

Nineteenth Annual Report of the Board of Managers of the Pennsylvania Epileptic Hospital and Colony Farm, 1915.

Twelfth Annual Report of the Barlow Sanatorium Association, 1915.

REPRINTS.

Acknowledgment is made of the receipt of reprints upon topics of medicine other than medical sociology from Drs. William Seaman Bainbridge, New York; S. H. Blodgett, Boston; C. H. Burton, Frank Burton, Detroit; Robert B. Greenough, Boston; Eugene Hertoghe, Antwerp, Belgium; N. P. Ravenel, Columbia, Mo.

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